



DELHI COLLEGE OF ENGINEERING
LIBRARY

CLASS NO

BOOK NO

ACCESSION NO

DATE DUE

For each day's delay after the due date a fine of 3 P. per Vol. shall be charged for the first week, and 25 P. per Vol. per day for subsequent days.

Borrower's No.	Date Due	Borrower's No.	Date Due
-----		-----	

THE FUTURE OF ECONOMIC SOCIETY

A STUDY IN GROUP ORGANISATION

BY

ROY GLENDAY, M.C.

AUTHOR OF THE ECONOMIC CONSEQUENCES OF PROGRESS, ETC.
ECONOMIC ADVISER TO THE FEDERATION OF BRITISH INDUSTRIES

MACMILLAN AND CO., LIMITED
ST. MARTIN'S STREET, LONDON

1944

COPYRIGHT

PRINTED IN GREAT BRITAIN

"Whoever is at all acquainted with what has been done during the last two centuries, must be aware that every generation demonstrates some events to be regular and predictable; so that the marked tendency of advancing civilization is to strengthen our belief in the universality of order, of method, and of law. This being the case, it follows that if any facts, or class of facts, have not yet been reduced to order, we, so far from pronouncing them to be irreducible, should rather be guided by our experience of the past, and should admit the probability that what we now call inexplicable will at some future time be explained. This expectation of discovering regularity in the midst of confusion is so familiar to scientific men, that among the most eminent of them it becomes an article of faith; and if the same expectation is not generally found among historians, it must be ascribed partly to the greater complexity of those social phenomena with which their studies are concerned."

BUCKLE'S *History of Civilization in England*. (Vol. 1, p. 6.)

"We cannot but consider the universe as a series of levels of organisation and complexity, ranging from the sub-atomic level, through the atom, the molecule, the colloidal particle, the living nucleus and cell, to the organ and the organism, the psychological and sociological entity. It follows that the laws or regularities that we find at one level cannot be expected to appear at lower levels. The conditions of their appearance do not exist there. . . . We must seek to elucidate the regularities which occur at each of these levels without attempting either to force the higher or coarser processes into the framework of the lower or finer processes, or conversely to explain the lower by the higher."

JOSEPH NLE DHAM, *Biochemistry and Morphogenesis*. (pp. xiv-xv.)

"History may be servitude,
History may be freedom. See, now they vanish,
The faces and places, with the self which, as it could, loved them,
To become renewed, transfigured in another pattern."

T. S. ELIOT, *Little Gidding*.

CONTENTS

INTRODUCTION: SUMMARY OF THE ARGUMENT -	-	PAGE I
---	---	-----------

PART I. LAWS OF GROWTH AND STRUCTURE

CHAPTER			
I. THE INDIVIDUAL AND THE GROUP	- - -		21
II. ON BEING A CONVENIENT SIZE	- - -		32
III. CONTROL OF GROWTH IN NATURE	- - -		47
IV. MAN-CONTROLLED GROWTH	- - -		63
V. PATTERNS FOR LIVING TOGETHER	- - -		83

PART II. HISTORICAL ILLUSTRATIONS

VI. FLUID ECONOMIC SYSTEMS	- - -		93
VII. STABLE AGRICULTURAL SYSTEMS	- - -		101
VIII. THE MEDIAEVAL CITY: A BALANCED COMMERCIAL SYSTEM	- - -		114
IX. INDIVIDUALISM AND UNCONTROLLED GROWTH	-		123
X. THE GREAT MIGRATIONS	- - -		140
XI. THE AGE OF INDUSTRIAL EXPANSION	- - -		154

PART III. INDUSTRIAL SOCIETY AND ITS AFTERMATH

XII. THE CREST OF THE WAVE	- - -		168
XIII. COLLAPSE OF THE SECOND BRITISH ECONOMIC EMPIRE OF SETTLEMENT	- - -		182
XIV. INDUSTRIAL SOCIETY: THE LAST PHASE	- - -		197
XV. TOWARDS THE SERVICE STATE	- - -		215
XVI. ECONOMICS AND HUMAN NEEDS	- - -		244
XVII. THE CRISIS OF CIVILISATION	- - -		269
APPENDIX: WAVES OF GROWTH AND THE TRADE CYCLE			287
INDEX	- - -		313

LIST OF DIAGRAMS

World Production of Principal Minerals and Metals 1860-1937: after Ivar Högbom	- - -	<i>Frontispiece</i>
The Curve of Error	- - - - -	<i>page 48</i>
Competition in a Homogeneous Population of <i>Param- cium Caudatum</i> : after Gause	- - - - -	52
The Decline in Growth-Rate of Five Important Items in American Economic Life	- - - - -	78
U.S.A. Population Growth and Building Activity, 1875- 1933: after Newman	- - - - -	303
U.K. Prices, Production and Rate of Interest, 1785-1938		305
Chart: Development of International Trade and Migra- tion 1870-1914 and 1920-1930	- -	<i>facing page 312</i>

INTRODUCTION

The present book is an attempt to apply the scientific method to the study of economic problems.

Ever since the days of Galileo, the discoverer of the scientific method, the specific aim of scientists has been to discover how things work, and not why they work as they do. The attitude of doctrinaire economists towards world problems, on the other hand, is still much the same as when more than half a century ago Engels, the friend and collaborator of Marx, wrote—"The economists of the day speak as if Richard Coeur de Lion, had he only known a little economics, might have saved six centuries of bungling, by setting up free trade instead of wasting his time on Crusades." Indeed, Mr. Colin Clark, lately University Lecturer in Economic Statistics at Cambridge, as recently as the summer of 1942, recommended that the world might do well to adopt as a guide for its post-war trade policy a Charter proclaimed by Edward I in 1303!

What is the explanation of this mediaeval attitude? Simply that, as a modern historian has put it, economists are unable to grasp the fact that every age can be analysed and understood only in terms of the events and conditions peculiar to itself. The question to ask is not what one would wish to happen, but what history will permit to happen: which tendencies in the present are destined to develop and which to perish.

Economists have evolved a theory as to how economic systems *ought* to work. If practical business men fail to follow the course thus mapped out for them, it is because they are either wicked or stupid, or both. But, even admitting that business men are both wicked and stupid, it still has to be explained why their wickedness and stupidity lead them to act in one way at one time and in precisely the contrary manner at another.

Take the perennial controversy of Free Trade versus Protection. Here is how a contemporary Free Trade economist sums up British experience over the past hundred years. "The great majority of economists, both in Great Britain and the world as a whole, were and are in favour of Free Trade. Again and again, international confer-

ences have urged reductions in tariff barriers. Yet Free Trade would almost certainly have come in Great Britain in the nineteenth century if no abstract reasoning had been advanced in its favour, and all the economists—who, after all, are the specialists in the subject—were quite powerless to stem the tide of Protection during and after 1931. It is a sad thought.”¹ How is this *volte-face* to be explained? The answer is, by a change not in the moral attitude or intelligence of the average British business man, but in the environment in which he has had to work. The present book is devoted to an examination of the forces which produce changes of the above kind in the business environment. The behaviour of the business man, considered as a private, independently-operating unit, is largely ignored; to avoid idle controversy I am prepared to accept the traditional economic explanations of that behaviour. But it is part of my thesis that it is only on relatively rare occasions—and then only for relatively short historical periods—that the average member of an economic community has ever been, or indeed ever will be, in a position to control his economic destiny as freely as the classical economist supposes.

Man is never found living alone, always in groups. As groups grow in complexity and size, group forces impinge on and restrict the freedom of the individual unit. Now, group behaviour is not simply a summation of the behaviours of the individual units composing it. It is behaviour of a different *kind*. A group has its own special independent organisation, its own special independent life history and its own special independent group behaviour. The relation of the group to the individual unit is similar to that of the cloud to the raindrop, the behaviour of the one can never be completely explained in terms of the behaviour of the other. No microscopical examination of a stick of sealing-wax, no study of the material of which it is composed, can enlighten us as to its electrical manifestations or properties. Thus it comes about that it is possible to have two or more entirely separate and distinct analyses of the same thing or event; each may be accurate and each at its own “level” may be able to offer an adequate explanation of the behaviour under observation. What cannot be done, however, is to describe fully the events studied at one level in the terms used to describe behaviour at the others. To employ an analogy of the biologist, Woodger: Rockets go up on

¹ F. H. Benham, *Great Britain under Protection*.

November 5th (*a*) because of a historical tradition in virtue of which this event is repeated each year on this day, (*b*) because rockets contain charges of gunpowder. The biography of Guido Fawkes is not deducible from a study of the properties of gunpowder! Nor can the evolutionary history of an economic society be derived from a causal analysis of the "use of scarce means for alternative ends" by a single economic man.

This book is divided into three parts. The first part sets out certain fundamental principles which appear to govern the growth and form of economic groups and systems; the second shows these rules at work by means of historical illustrations; the third part leads up to the outbreak of the present war, and explains the basic causes of the world economic breakdown of the nineteen-thirties. In the concluding chapters an attempt is made to indicate the main trends which are likely to give shape to the economic systems of the future.

The present book supplements the argument developed in my *Economic Consequences of Progress* and various papers. The method of analysis employed in that earlier book, written nearly ten years ago, has been so far justified that it has been unnecessary substantially to alter the forecasts and recommendations then made. There has been an acceleration of the pace of change; that is all.

The misadventures of war have prevented me from adequately re-checking all the references made to the work of others in this field; in some cases it is not possible even to give the author's name. For this seeming discourtesy I offer my sincere apologies, and hope that those against whom I have offended will acquit me of any desire to claim personal credit for suggestions or ideas which should properly belong to others. This applies only to details of analysis and not to the method of approach as a whole, for which I alone am responsible. Mine also is the sole responsibility for the opinions and conclusions expressed in the final chapters, many of which are likely to provoke strong disagreement. This is all to the good at a time when public opinion is still fluid and reconstruction plans are still in the making. In any event, whatever views may be held in regard to the conclusions drawn from the facts set forth, it cannot, I believe, be denied that the facts themselves must form the background of any considered survey of the future prospects of our present industrial civilisation. To forestall attempts that might otherwise be made to

THE FUTURE OF ECONOMIC SOCIETY

Identify British industry in its corporate capacity with views and opinions for which I alone am responsible, I have deliberately refrained from all reference to the issues that will arise in the immediate transition period following the war. The only future touched on is the long-range future that will emerge when the accumulated shortages of the "duration" have been filled and war savings exhausted.

SUMMARY OF THE ARGUMENT

Basically, the problem of constructing stable economic systems is simply that of adjusting populations to their environments. Communities of human beings, like those of all plants and animals, possess a definite organisation which undergoes changes under the influence of internal forces and the pressure of external environment. Even a slight change in one component may produce an alteration in others and lead to a whole chain of consequences. The convenient size of any community will depend on the way in which it is organised in relation to the environment which has to maintain it.

An economic environment may be likened to a public hall, and a human population to the people who occupy the hall. Used to house a cinema audience, a hall can *conveniently* hold more people than when used for dancing, and as a dance-hall can house more people than when used to stage a boxing-match. Obviously it is quite impracticable to institute absolute comparisons between these three ways of using the hall. The same is true of the ways of living in different types of economic systems. Thus all comparisons based on money valuations such as relative incomes and price levels are meaningless. There will, however, be general agreement that an essential factor in determining the personal happiness of the average individual in any particular case will be the degree of freedom and area of space allowed to him.

Experience teaches us that populations tend to grow to the point of overcrowding, unless deliberate steps are taken to control growth in numbers. Failure to check in time such growth in numbers is the main cause of mankind's failure to attain—or, if attained, maintain—the Utopia of its dreams.

As Malthus observed when pointing out that corn countries are more populous than pasture countries, and rice countries more populous than corn countries, "happiness does not depend on their being thinly or fully inhabited, upon their poverty or their riches, their youth or their age; but on the proportion which the population and food bear to each other." In the case of our public hall and its modern industrial counterparts, we should substitute "standard of living" for "food."

The density of the population required to produce overcrowding in a particular area or economic system will depend partly on the way in which the environment is organised for living purposes and partly on its rate of economic growth. It is usual to find that the better the conditions of existence, the fewer the number of individuals accommodated in the area. The reason for this can be explained by the analogy of a growing forest. The more favourable an area is for the growth of trees, the more luxuriant will be the development of each tree, and the sooner will the tree-tops begin to close above, and the less successful or oppressed become shut out. The better the conditions of existence, the more developed and the greater will be the space occupied by every individual in the adult state; but the individuals will be fewer in number. The investigations of Sukatshev and others show that this is a general rule for all forest species. Economic history suggests that this rule also has application to human communities. The principal difference is that, in the latter case, the oppressed individuals can sometimes insist on a subsequent redistribution of the space, opportunities and resources enjoyed by the more fortunate.

In an economic system such as our own of today, in which a wide divergence between rich and poor developed early, the long time taken in effecting this redistribution has helped not only to conceal from the average individual the speed with which it has been taking place, but also has led him to mistake internal redistribution for an enlargement of economic opportunity in the system as a whole. But what he has come to regard as a general enlargement of opportunities, has often only been a concealed form of tighter "packing."

Most people fail to realise that, because of certain natural restrictions on the continuing enlargement of our system as a whole, the very poor can never hope to attain the standard of living of even the

rich of today. Nowadays the difference in standard between rich and poor depends increasingly on the enjoyment of such things as ample space, rare luxuries, and articles which are an object of desire only so long as they are restricted to the few; and lastly, personal services which can be afforded only so long as there is a wide gap in income between the server and the served—in other words, either things whose value depends on their rarity, or services which tend progressively to disappear as a more equal distribution of individual incomes proceeds.

Thus, there is no such thing as the ideal economic system, only a number of positions of equilibrium. Each position of equilibrium, which will be a fluctuation round a mean level rather than a fixed line, is the result of two opposing sets of forces: (1) the pressure of the population to grow and (2) the resistance offered to that growth by the environment. As man's ability to organise his environment in order to support more life has increased, so have the numbers to be accommodated grown. Each major step forward has involved a discontinuity—a change in the size and/or in the internal capacity of the "hall"—a rushing up of a new building and a rushing in of people and goods to fill it. Naturally those in occupation of the "hall" at the time of the discontinuity are liable to resent being disturbed. Thus it is that basic changes in economic structure have usually been achieved either by force or by an occasion being chosen when conditions have permitted the building of the new structure to proceed *pari passu* with the destruction of the old. For example, the rapid change-over from the mediaeval to the modern system in the eighteenth century was then achieved only because it proved possible simultaneously (1) to take people off the land and place them in industries being developed contemporaneously, and (2) to reorganise the structure of farming so that those who were left on the land were able not only to produce their own food needs as heretofore, but also to provide a surplus for the support of those transferred to industry and its towns. Once an existing economic system has been broken down to its constituent elements and a fresh one built up in accordance with a new and more generous ground plan—or alternatively its internal capacity drastically reorganised—both population and output are able to make a fresh spurt of growth. This new growth will continue—but with progressive deceleration—until such time as the

new structure in its turn becomes overcrowded or reaches a new equilibrium position.

To avoid confusion and to provide a clear picture, the present book has been confined to the study of "major" changes in structure or "enlargements," but in a smaller degree the same effects are produced by lesser structural changes. It should be added that the actual structural "change" itself only starts the wave of new growth; its completion may take years, and will be effected in stages, each stage being usually separated from its predecessor by a discontinuity, punctuated by a resting period during which certain elements are reorganised for the next stage (so-called Trade Cycle depressions).

What makes it so difficult to achieve a stable equilibrium between a population and its environment, i.e. a balanced economic system, is that the factors which control growth of population on the one hand and those which control growth in the ability of the environment to support additional numbers on the other, have not in their historical antecedents nor in their current working anything in common.

To take population first. Fertility, it is recognised, cannot be regarded as a fixed quantity for a given nation, but is subject to natural fluctuations. The proximate causes of these fluctuations are still the subject of discussion between experts. One group inclines to lay stress on the population aspect. Another view represented by Udny Yule concentrates on the environmental aspect, and, in particular, on changes in economic conditions. That there is a close connection between the two is clear from the close correlation that has been shown to exist between the movements of prices and the rate of increase of population in the nineteenth century. From this aspect the important point to stress is that what matters to the economic system is the supply of adults. But a rise in the birth-rate in response to an improvement in the economic environment leads in the first place to the production of *infants*. These are not available for economic production for some twenty years. Population—workers—are demanded now: workers turn up some twenty years later when they may not be wanted!

Let us now turn to the factors responsible for the growth of the environment. The simile of a public hall has been deliberately chosen to represent the part played by the economic environment, in order that attention may be concentrated on the particular aspect of the

population—environment relations—with which we are here concerned. This aspect has nothing to do with the day-to-day changes or similar short-term fluctuations, only with “major” innovations resulting in a growth in size or capacity of the economic system as a whole, in the sense that more goods *and* more people can be *permanently* accommodated in it than before. It is argued that, as in the case of natural communities of plants and animals, the “structure” which has been built up over the years as a result of the adaptation and specialisation of the population and environment to one another must first be broken down, either in its entirety or in substantial part, before a new and more commodious one can be built up to take its place. It is these demolitions and reconstructions that constitute the discontinuities which separate one stage in the march of progress from the next. Now, while most people would be prepared to admit that Britain’s population could not have continued to grow at its early nineteenth-century rate of increase much longer than it did without converting the country into a vast slum, there is a curious reluctance to admit the possibility of the existence of a similar limitation on the economic exploitation of the environment. There is even greater opposition to the suggestion that, because the relations of a population to its environment are those of a dynamic balance of forces, a slowing down in population growth inevitably connotes a corresponding adjustment on the environment side—one cannot change without the other changing also.

One of the reasons why what I for convenience term the S-curve principle is so little appreciated is that production problems are customarily viewed from the point of view of the *individual* firm and *individual* consumer. But economic growth is primarily multiplicative or compound interest growth, and this is a *group* phenomenon. If we consider a whole industry we shall find that on the average each firm tries to sell a little more next year than this. But once the first flush of expansion is over it ceases to be possible for everyone in the industry to continue to expand his business on the compound interest principle in this way. To escape from the inevitable slowing down in the rate-of-growth of their own sales the more enterprising firms will devise ways of producing more cheaply, that is, they will invent ways of maintaining the rate of expansion in their own sales at the expense of a decline in those of others in their industry. Those who

judge what is happening in the industry merely by the figures of the firms *still left* in the industry may wrongly conclude that there has been no slowing down in the rate of growth in the industry *as a whole*, especially as its aggregate sales will still be expanding, even if at a slower rate of increase than before. Such terms as "overproduction" and "unwanted surpluses," however, are not applied to the industry until the point is reached when even the few firms left cease to be able to maintain their rate-of-growth against the growing sales-resistance.

It is vital to an appreciation of the mechanism which controls economic growth to understand that the rate-of-growth of the aggregate of production meets with resistance quite early on in the industry's history, and the progressive increase in the pressure of this resistance is largely responsible for the progressive concentration of productive capacity that occurs. It is responsible also for the efforts to re-stimulate the speed of growth of output, by the introduction of larger-scale methods. But, of course, it is quite impracticable to revive permanently the original acceleration, for, as with plants and animals, growth on the compound interest principle, if continued for more than a brief interval, leads to an impossible situation. Many years ago, Raymond Pearl pointed out, for instance, that if the American production of coal had continued to grow at the rate at which it was growing in the 1890's, "it would not be long before it would reach a produced tonnage such that the entire globe would have to be solid coal to permit its realisation." Misunderstanding has arisen partly because the way to revive flagging sales is to produce more cheaply. This, for purely technical reasons, involves producing more *quickly*, i.e. more output per man in a given time—in other words reducing costs by eliminating man-power. Few produce more quickly where previously many produced more slowly. The changes in production methods which this speeding up will require are likely to take place in a series of discontinuous steps, either confined to the particular industry or affecting industry generally (i.e. involving a so-called Trade Cycle depression) and this serves to conceal from the casual observer what is happening. As the latest forms of large-scale production plant can be made to pay only if they are worked at optimum output, it has been necessary artificially to speed up the rate of growth in consumption by such devices as hire-purchase. But the more sales

are speeded up the more quickly saturation point is reached. People say how marvellous the machine! They forget that while it may increase sales today, it can do so in many directions only at the expense of a slowing down in the *future*. I refer not only to anticipatory future purchases by means of hire-purchase credit, but also to the using up of nature's stored-up capital resources of soil fertility: the consumption of the products of animal and plant populations at a more rapid rate than they can be renewed, and the uneconomic exploitation from the long-term point of view of natural capital resources in the form of mines, water and land. Resources have been used quickly and wastefully instead of slowly and conservatively.

In his haste to capture the market among the present few the individualist entrepreneur has destroyed the *capacity* to supply the needs of the many in the future. Those who talk vaguely about reviving economic expansion by removing what are termed the "artificial controls" on production entirely misunderstand the whole nature of the mechanism of the production process in a present-day economic system. There are also those who argue that the way to deal with the people and materials which have been ejected from the system by the operations of the machine is to use them to develop projects not justifiable on strictly economic grounds. They fail to realise that these suggestions can be put into operation *on a large scale* only at the cost of lowering the standard of living of other sections of the community. These controls and these unwanted surpluses are inevitable and inescapable consequences of the process whereby, in the process of expanding the size of the present economic system, the standard of living of the individuals who have managed to remain *at work* has continued to be maintained and raised. Had some individuals not been eliminated the standard of living of the remainder would have been lower than in fact it is.

The "enlargement" of our present-day economic system was started by the break-up in the eighteenth century of the mediaeval system of agriculture and handicraft, based on the organisation of the environment into a number of more or less separate and independent self-sufficient local units, and its replacement—after a large-scale redistribution of centres of industrial and agricultural production—by a single national unit, the separate sections of which were linked

together first by a system of national canals and roads, later by the railway and last of all by the electric railway and motor transport. In the middle of the nineteenth century this national unit was, in its turn, enlarged into a unit of international dimensions. The effect of these major reconstructions was to make possible revolutionary reductions in costs of production and distribution by enabling goods to be moved *quicker* in a given period of time. For example, we read that early in the eighteenth century the price of meat in London was 8d, while at Horsham, less than 40 miles away, it was only 1½d. Obviously, once the major cuts in costs had been made, and their benefits had, in due time, filtered through to the ultimate consumer, succeeding cuts became progressively more difficult and had a progressively decreasing effect in stimulating additional consumption. During the decades necessary for this movement to work itself out, manufacturers experienced a progressively increasing resistance to their sales drives. For a time they overcame this by successive alterations in the structure of production and distribution.

The view taken in this book is that this process has now been taken to its limit within the present economic framework. Indeed, the last stage—associated with the development of electricity and motor transport which brought a temporary relief to the pressure in overcrowded urban areas—owed much of its effectiveness to the fact that it was assisted by the device of hire-purchase, a scheme for inducing consumers to spend today the income of tomorrow. A bigger boom is obtained today at the price of a worse slump tomorrow. But unless hire-purchase had been devised to quicken sales, then mass production would not have been profitable in many directions, because it would have found itself producing goods more quickly than they could be absorbed and prices would have had to be raised to offset losses. Unless some new way of increasing the size or containing capacity of our economic “hall” can be devised, involving a radical reorganisation of its basic structure, the increasing resistance to further growth, which both the population and the economic exploitation of the environment have been meeting in recent years, will lead to internal changes within the population-environment system that will bring growth to a complete standstill (Le Chatelier’s rule) or to the whole arrangement disintegrating

under the pressure of competing internal forces or of external aggression.

Thus far we have been concerned with the reactions of the population *as a whole* to the environment *as a whole*. Something must next be said about the effect of the mutual actions and reactions to the external pressures upon the sub-groups within the main population group on the one hand, and within the main environment group on the other. For the sake of clarity, these latter problems may be distinguished by calling them problems of *internal* redistribution. How, for example, do the sub-groups of a population behave when the group as a whole begins to experience difficulty in maintaining its earlier rate of increase in standard of living? In nineteenth-century Britain, for example, we know that in an attempt to maintain the increase in the standard of living for their families and to provide higher opportunities, the more prudent and farsighted income groups began to practise birth-control. Similarly, those less well off, finding their progress up the ladder of wealth and opportunity impeded, and attributing this to the increased rapacity of the wealthier classes, began to press for a redistribution of opportunity and wealth by way of higher wages, social services, and increased taxation of the rich. But there is a limit to which redistribution can be taken. In our own case, largely owing to the operation of a falling death-rate—a “group” factor outside the control of the individual—the stage has been reached where those with quite modest incomes are on the one hand reducing the number of their children so as both to maintain the family standard of living and give the individual child a better chance in a world of rapidly shrinking opportunity, while on the other they are being increasingly taxed to provide for the children of the improvident and feckless. That the condition of many of the poor is partly a result of their own failure to follow the example of the more prudent by controlling their numbers is suggested by recent investigations into the problem of poverty. Every social worker and slum parson knows that it is the large family that breeds poverty. The overcrowding survey of 1935 which divided the families into two groups (1) “non-overcrowded” and (2) “overcrowded” showed that not only were the overcrowded families, on the average, larger than the non-overcrowded families, but also that the overcrowded family, although it was on the average 80 per cent

* larger than the non-overcrowded family, occupied a dwelling actually 38 per cent *smaller*.

The problem has its qualitative as well as its quantitative side. Professor J. S. Huxley sums up this aspect in the following words:

"We push on with our reduction of infant mortality until we save an excess of cripples and defectives from which to breed. If this slow relentless process is not checked, humanity will gradually destroy itself from within."

Let us now turn to the problems of *internal* adjustment on the environment side. The environment functions in three principal ways: (1) as a purveyor of jobs, (2) as a purveyor of goods, (3) as a provider of housing and all the various amenities, apart from food and clothing, that go to make up what is known as the "standard of living."

In the early days of a new economic structure, the prices of goods will, relatively speaking, be high. For to break down the cost and debt structure of the preceding system and effect a redistribution of resources and population, money inflation in some form will almost certainly have been necessary. In addition producers in the new structure, though they will, as a result of the relocation of industries and rearrangement of resources, be able in due course to produce more cheaply than under the old, are unlikely to drop their prices to the fullest extent possible, or make the greatest use of the various new means now open to them of reducing prices, until demand begins to catch up with supply. Also, as in the case of the building of the economic system as a whole, the reorganisation of production methods to produce more cheaply will involve structural re-
* organisation at certain stages in the process of productive evolution—discontinuous changes—and these will not be made until conditions have made it clear that there is no other way of overcoming the pressure of increasing sales-resistance. Whenever the rate of expansion of a system's national purchasing power as a whole slackens, the only way to maintain the flow of sales of any particular product—or prevent an undue falling away—will be to try to "crowd" more goods into that limited purchasing power by making and selling each unit more cheaply. This can be done only by repeat-
* ing in miniature the process employed to enlarge the capacity of the economic system as a whole, namely, redistributing the processes and

production centres *within* the industry over a "larger area," that is, increasing the quantity of factors of production used per unit of labour, or by reducing the number of discontinuous hand operations by, for example, substituting mass-production methods for ordinary factory production methods. When the point is reached that the increased quantity of goods sold ceases to be sufficient to recoup the outlay on the reorganisation and new plant, manufacturers will begin to practise "birth-control." Combines and cartels will be formed to prevent a collapse of prices to an unremunerative level, and monopolies established to check new entrants.

As in the case of the population, the specially hard-hit industries also will press for assistance from the more successful via the State, by means of subsidies, tariffs, public works schemes and the like. This will add to the congestion because its effect on industrial evolution will be similar to that produced by a decline in the death-rate in a population practising birth-control. Here also there will be a limit beyond which the process of internal redistribution cannot be carried without doing more harm than good.

Developments in regard to employment and the standard of living will be much the same. To get into the economic "hall" at all a ticket is needed. That "ticket" is a job. Only those with jobs can occupy a seat, participate in the amenities and enjoy the entertainment provided. The amenities and entertainment correspond to the output of the system and the "standard of living" it provides. In the beginning there will be more jobs or "seats" than people to fill them and wages will accordingly rise; later the rate of supply of new jobs will fall off and wages will decline as a result of attempts to "pack" more workers into the system. Unions will be formed to resist this by maintaining wages and conditions, and "birth-control" will also be practised in regard to new entrants into the industries most seriously affected. As, at such times, many industries will be striving to maintain their place in the market by introducing cost-saving plant, there will be an acceleration in the rate of discharge of labour from the older industries just at a time when the rate of creation of new industries and employment is tending to slow down. People will also tend to work longer hours and postpone the date of retirement. There will thus be an increasing piling up of unemployed on the one side and an increasing inelasticity in the field of employment on the other. To

encourage redistribution of opportunities between the "haves" and the "have-nots," public works will be started and unemployment schemes established. Here, also, there is a limit to what can be done without causing a breakdown in the framework of the system.

The "standard of living" which corresponds to the standard of amenities and entertainment provided in our "hall" will pass through a similar train of experiences. First, under the growing pressure of congestion there will be a progressive redistribution—by a series of discontinuous steps—of the amenities and standards of comfort of the rich to the poor. There will be a limit to this also if political as well as economic breakdown is to be avoided, especially bearing in mind that there is no truth in the illusion fostered by economists that human needs are infinite. A great part of the new commodities and services provided during the past thirty years have been substitutes—ways of extending to the poor rare luxuries previously enjoyed by the rich on account of their scarcity or high prices—or else they have been alternatives for existing forms of materials and services. There is a limit imposed by *time* on the number of turns that can be crowded into a given variety entertainment. Beyond a certain point overcrowding will begin to spoil the spectator's proper enjoyment of any one turn. So he will begin to ask for fewer turns rather than more, that is, more time to enjoy fewer turns. The ignorant woman who exclaimed: "But 48 hours a week! That is only two days out of seven," unwittingly illustrated another side of the same trend. By working the equivalent of one more day a week, the industrial worker of today could in theory increase his material possessions and wealth by fifty per cent. He, in my view rightly, prefers more leisure to more goods.

One further possible source of economic breakdown remains to be considered. For this, the analogy of a public hall is inappropriate as this presupposes a structure at once too rigid and limited. An economic system such as that of Britain in the nineteenth century was not held together by anything comparable in rigidity to the walls of a building; the ties holding together the different parts of its structure were less tangible and so much more pliable; such things as market connections, trade agreements, complementary relations, established habits and customs and, last but by no means least, a complex web of money debts and price relations.

As by a process of enlargement a system of this kind expands over an increasing geographical radius, the point is almost certain to be reached when one or more of these insubstantial links, which alone bind the areas on the circumference to the centre, will become overstrained and snap. This is especially likely to happen when, as in the case of the British system, specialisation reaches the point at which one set of overseas areas concentrates almost exclusively on producing agricultural and mining materials, while another—the mother country—geographically remote from the overseas areas, concentrates on supplying the common industrial needs.

To keep the two sets of areas in step will become harder the more the “climates” of their respective environments differ from one another and the more widely separated their respective positions are on the ladder of economic evolution. The reason is that the rates of growth of the different components of the two environments and populations will be too disparate to reconcile in any common understanding. It was to be expected on these grounds alone that the British overseas Dominions would not be bound for more than a limited period of time by the unwritten understanding of our nineteenth-century international system which required them to concentrate almost exclusively on agriculture and mining, leaving to Britain the task of supplying their industrial needs. To have attempted to insist on their being so bound for more than a limited period would have led to a political as well as an economic breach, as had happened when an attempt was made to control the development of our American colonies in the second half of the eighteenth century. It was inevitable also that once the basic link of complementary trading binding these areas into a single common whole was broken, it would be only a matter of time before the forces of growth reached the point of causing an almost complete split-up of the original international entity into a series of independent self-contained national units, which then would proceed to try to sell to one another surpluses of food and manufactured goods, in many of which they were one and all tending to make more than enough for their own domestic needs.

To recapitulate, the process of overseas expansion was started by the home country raising a loan to finance the export of population and equipment to develop the land and the mines of a new oversea

* area, part of the produce of which was in due course remitted to provide for the interest and repayment of the loan; the second stage was the export of manufactured consumers' goods from the home country in exchange for the produce of the overseas mines and land; the third stage was the sale of machinery and plant to the overseas area to enable it to make its own industrial manufactures; the fourth stage was reached when the overseas area was not only able to make increasing quantities of its own internal needs of industrial manufactures, but was also able to embark on the manufacture of its own industrial plant and equipment; in the final stage the overseas area in its turn began both to export manufactured goods and to embark on foreign investment. The repercussions of these developments on the home country were, first, a progressive decline in its exportation of industrial manufactures and, later, the adoption of Protection and exchange control in order to safeguard its balance of payments and domestic employment. Indirectly, this encouraged a movement for the redevelopment of domestic agriculture and the manufacture of synthetic substitutes for imported materials, partly to provide what could not now be afforded owing to the decline of exports, and partly to employ some of the people for whom openings could no longer be found in export work.

If, in an international system undergoing this process of disintegration, it is possible to arrange that by the time the final stages are reached the populations of the overseas areas have managed to grow to the point at which they are able to consume the bulk of their home-grown food and mining produce and, similarly, for the population of the home area to decline to a size which can be fed comfortably off its own land, separation can be effected without causing undue hardship. But this has rarely happened. The partial break-away by the U.S.A. after the last war left the countries of Europe faced not only with a lack of balance between agriculture and industry, but with grave over-population as well. The population issue was stated bluntly by Sir Percy Bates, Chairman of the Cunard Company, in his annual statement in 1941. After the last war, he said, his company's building programme was based on the desire of many inhabitants of these islands and Europe to travel to North America; and it was dislocated by the restrictions which were placed by the United States, Canada and Australia, and the rest of the world upon

immigration. "But for these restrictions, there would by 1939 have been some twenty million fewer people in Europe." Sir Percy Bates may have exaggerated in saying that, in that event, "there might not have been enough steam in Europe for Hitler to have been able to cook up this war." But it is certain that over-population in Europe coupled with persisting unemployment was an important feature of the background out of which were to emerge the forces that led to world war.

The Dominions, on the other hand, still a long way from maturity, found themselves left with overdeveloped agriculture and, relatively to their ultimate capacity, underpopulated. But, owing to the lack of balance between their industrial and agricultural sections, and the general atmosphere of trade stagnation, they were forced to restrict rather than encourage fresh migrants. Once the period of reconstruction and recovery after the last war had been completed, unwanted surpluses of many agricultural and industrial products began to appear on the world markets. These, together with the international financial disorder which accompanied them, were responsible for the international breakdown in the nineteen-thirties.

It is of interest to observe that Arnold Toynbee, who has examined the problem of the collapse of civilisations both present and past from a different angle in his monumental *Study of History*, arrives, in his own terminology, at much the same fundamental explanation of the causes of such breakdowns.

Pointing out that the degree of command over environment which is possessed by any given society can be measured, for practical purposes, in terms of geographical expansion he observes that—

"On an empirical test a good case can be made out for a correlation of geographical expansion, not with social growth, but on the contrary with social disintegration. This indicative conclusion is supported by two *a priori* considerations. In the first place, one of the commonest forms in which the breakdown of a civilisation declares itself is an outbreak of fratricidal warfare between the states members of the Society. The second and more fundamental consideration which makes it probable, *a priori*, that a widely and rapidly expanding Society will prove to be also a disintegrating Society arises from the fact that the social radiation of a Society into the life of alien bodies attains its greatest penetrative power when the different elements in the radiating Society are being radiated separately; the economic elements penetrating in the van, the political elements following in the next wave of attack, and the cultural elements—which are the essence of a civilisation—bringing up the rear in order to occupy and organise captured ground. So long as a civilisation is in the growth stage, all

its elements cohere to constitute an indivisible whole . . . the civilisation radiates abroad either in its totality or not at all.”¹

In other words, when further enlargement and growth by elaboration of the basic ground plan ceases to be practicable, breakdown ensues; thereafter growth in any one direction or part becomes competitive instead of complementary to that in others.

The position, so far as our present civilisation is concerned, may be summed up by saying that while argument may still be possible about the actual position of individual countries on the curve of decline, there can be no doubt about the existence of the breakdown itself. The days of the present “economic society” are numbered. Difference is possible only in regard to the actual number. Since this change is a wave movement, not all countries will be affected at the same time or in the same degree; while some will be in the process of breakdown, others not yet at maturity will still be on the up-grade. Nevertheless it is idle to suppose that even the latter can escape unscathed. For, viewed in the large, the present collapse is seen to be the result, not of the failure of this or that group in a particular country or of this or that national area in a particular international system, but of the breakdown of a structure built up on a particular idea—the economic idea: the *individual* pursuit of unlimited wealth.

If, as seems quite possible, the structure that will in time take its place will be built for an entirely different purpose and be activated by an entirely different principle, then we must expect a revolutionary change in the attitude towards material wealth on the part of the mass of individuals who are to form the “bricks” of the new structure.

In the past, every major step in evolutionary progress has been a discontinuous break followed by an outburst of change. But just as it would have been impossible for a mediaeval serf to imagine life under a modern industrial system, so present-day man cannot expect to foreknow what his future system will be. The formulation of future human purpose cannot be decided on the basis of the past. The new situation that will arise will differ in quality from that to which we have been accustomed, and will bring new problems which will have to be solved on their own merits. But the history of the ten or twenty million years that have elapsed since his ancestral stock first branched

¹ *Op. cit.*, Vol. IV, p. 56.

off from the rest of the anthropoids justifies man the individual believing in his own future destiny.

The centre of the immediate struggle is between two opposed ideals—that of the subordination of the individual to the community and that of the intrinsic uniqueness of individual man.

COLESHILL, BUCKS

ROY GLENDAY

June 1943

Readers who are not interested in the theory which provides the background of the argument, are recommended to start with Chapter IV.

PART I
LAWS OF GROWTH AND STRUCTURE

CHAPTER I

THE INDIVIDUAL AND THE GROUP

Scientists have come to see a complicated structure where they thought everything was simple. In particular, the whole of their ideas about "units" have undergone a revolution. Nowadays when the scientist speaks of the properties of a "unit," it will nearly always be found that his "unit" is no more than a mental concept designed to typify certain representative properties of a group.

Solitary units are never found in nature, only groups.

Since this discovery was made, nearly all the basic so-called "laws" of nature have been shown to be "group" laws, not, as was at one time supposed, laws dealing with the behaviour of single units. The difference between the behaviour of the group and the behaviour of the unit is well illustrated by an example given by Clerk Maxwell to the British Association at Bradford in 1893—"We cannot do better than observe a swarm of bees, where every individual bee is flying furiously, first in one direction and then in another, while the swarm as a whole is either at rest or sails slowly through the air."

As a group can undergo change through the operation of forces within itself, there is no need always to invoke the assistance of some external cause. Accordingly, the present-day scientist rarely speaks of "cause" and "effect."

The notion of cause and effect arose out of man's natural tendency to look at nature from his *own* point of view, not from the point of view of a man anxious to find out the truth about nature *as it is in itself*. In recent centuries, man has taken pleasure in featuring himself as a kind of god, able to command nature to do his bidding. Thus it is that the word "cause" has come to imply compulsion. The scientist looks at nature from the point of view of a practical person anxious to find the conditions that will give him the results he wants.

All the other conditions which go to make up the "assemblage of conditions" which constitute the "cause" of an event do not interest him. As the conditions of any event are quite possibly infinite in number, the particular "condition" in which the scientist is interested may in fact be a quite unimportant item in the chain of events which produces the desired result.

Professor R. G. Collingwood points out that if the vocabulary of practical science were overhauled with a view to eliminating all traces of anthropomorphism, language about "causes" even in this sense would disappear, and language about means and ends would take its place. He illustrates the distinction between "cause" in its strict sense, and "cause" in the relative and partial sense in which it is used in science, by a homely example.¹ "A car skids while cornering at a certain point, strikes the curb, and turns turtle. From the car driver's point of view the cause of the accident was driving too fast, and the lesson is that one must learn to drive more carefully. From the county surveyor's point of view the cause was a defect in the surface or camber of the road, and the lesson is that greater care must be taken to make roads skid-proof. From the motor manufacturer's point of view the cause was defective design in the car, and the lesson is that one must place the centre of gravity lower." If the three parties concerned take these three lessons respectively to heart, accidents will become rarer and motoring more comfortable. But we still cannot say that we have found *the* cause of the accident. For there are still many other conditions to be taken into account.

Some of these conditions are "causes" in the scientific sense, others are not. For example, the managing director of the car-owner's insurance company, who says that his experience has convinced him that the cause of all motor accidents is driving too fast, is making a statement that has no meaning from the strictly scientific point of view. This is not surprising since, as Collingwood observes, "the manager of the insurance company is not occupied in any activity which can either produce or prevent motor accidents, but simply with making money out of them—a very different matter." What the scientist wishes to discover is something practical that will reduce the number of accidents. The difference between these two methods of approach may be illustrated by assuming that an increase in motor-

¹ *Essays in Metaphysics.*

car accidents occurs and that, as a result of an agitation by, let us say, insurance companies, the police attempt to deal with the situation by pressing for heavier fines on the individual motorist. A statistical examination of the data covering the various conditions affecting motoring may on the other hand reveal a significant correlation between the increase in accidents and some factor quite outside the personal control of the individual motorist such as, for example, the "black-out" regulations of the present war period. This discovery may suggest another and possibly a more immediately practical method of reducing the number of motor accidents than prosecution of the individual motorist.

Group factors of this kind intervene just as surely to modify the consequences of human behaviour in other directions. Most of them, however, unlike the "black-out," intervene not dramatically, but subtly and unobtrusively. Their presence cannot usually be detected directly or immediately; it needs an analysis by trained statistical experts of all the relevant clues, and this must be done over a period of time. It is because modern scientific laws are the result of "impersonal" statistical investigations of this type that they are commonly known as "statistical" laws. They never assert certainties, only probabilities. These probabilities are true only within certain limits, but these limits can usually be determined with a considerable degree of accuracy. Thus, in place of "causes," the scientist now seeks for "group regularities," that is, sequences of events, which over periods of time either repeat themselves more or less automatically, like the seasons, or can be made to repeat themselves approximately by a suitable adjustment or selection of the components, as is done, for instance, by farmers when operating a rotation of crops, or by a chemist investigating chemical reactions in the laboratory. The repetition obtained is never exact, as no event in nature ever repeats itself.

This has been termed the "historical" method of approach because the present behaviour of a group can only be understood from a knowledge of its past behaviour, just as its future behaviour will emerge by a more or less orderly process from its present condition. Applying this method to social and economic problems it means that when we ask why such and such a group of people at such and such a time behaved in such and such a way, we are not

permitted to identify the cause of the *historical* fact in question by attributing it to something outside history, such as the personal, physical or psychological characteristics of the human beings comprising the group, or to their refusal as individuals to conform to certain abstract laws of the kind expounded by economists.

The question is a significant one, if it expects an answer in the form: Because they or their predecessors, from whom they had inherited their civilisation, had previously behaved in such and such ways, and because such and such a process of change converted the one form of behaviour into the other.

It will be observed that this method of analysis rules out all "personal" questions such as, for example, whether any particular form of social or economic behaviour is moral or not. Morality is a question for the individual; the group—as a group—is amoral; morality as applied to a "group" has no meaning. "History is *a priori* amoral; it has no conscience."

Obviously, if our economic system were composed of individuals all subscribing to a common body of ideas, and each one prepared voluntarily to sacrifice his private benefit to the commonweal, our problem would be greatly simplified. But it would not be solved. Even given the greatest possible *individual* goodwill, "group" obstacles might, nevertheless, make it impossible to realise at a given moment of history the solution which theoretically might appear to be the most desirable. This being the case, it would be as well to know something of the nature of group economic behaviour. It is with this problem that this book is primarily concerned.

Traditional economics analyses economic experience largely in terms of an abstract unit—economic man. The behaviour of an economic "system" is by implication regarded not as the group aspect of the behaviours of all the unit "economic men" comprised in it, but as an *average* of all those unit behaviours. Such a method of approach can be fruitful in results only so long as the economic system concerned remains fluid and freedom of individual action is not seriously impeded by mutual interference or overcrowding. But what justification is there for presuming that these conditions will continue to hold good once the first flush of pioneering is over and the system begins both to acquire a structure of its own and to experience a progressive limitation of individual liberty of choice and movement under the

pressure of increasing population? The degree of mobility, for example, enjoyed by an average individual is not the same in a crowded modern town as it was when the same area was a piece of open country; nor can the same degree of personal responsibility for, say, motoring accidents that occur be laid at the door of the individual driver of today as in the case of a driver in an earlier period. The argument developed in this book suggests that, as an economic system grows in age and complexity, forces of congestion exercise a progressively increasing measure of limitation on the freedom of action of its constituent individuals. It starts by being an *unorganised collection* of individuals and ends by being an *organised combination* of individuals.

Such an organised combination not only has a life history—and a continuity of existence—of its own, different from, and independent of, that of its constituent units, but it also, in its capacity as an organised group, possesses properties and embarks on forms of behaviour which have no meaning, if an attempt is made to describe them in terms appropriate to “individual” behaviour. The difference is similar in kind to that between the behaviour of a single drop of water and the behaviour of a stream, or the problems of the tree and the problems of the forest. The behaviour of the group has *qualities* and characteristics which are entirely different from those of the unit. A drop of water taken from a stream can tell us nothing of the stream’s pace, direction or depth; neither can we learn the secrets of the forest from a study of the life of the individual tree.

The suggestion is not that analysis in terms of the “unit” leads to incorrect results, but that such analysis is incomplete; it requires to be supplemented by analysis in terms of a higher level of organisation—the economic group—before really effective practical action is possible. The value of analysis at this higher level is that it reveals economic behaviour in a different—and usually a more manageable—form. In addition it enables, as does the same method applied in the natural sciences, predictions to be made of future trends, given certain limiting conditions.

The group or historical method of approach begins by enquiring: Why do firmly established economic habits and methods of economic thought and action change? The kind of answer this question demands is: Because the economic habits and behaviour of any given

society at any given phase in its history form a pattern or structure which is subject to "strains" of a greater or lesser degree of intensity, which may be taken up in various ways, but never annihilated. If the strains are too great, the structure collapses and is replaced in time by another, which may be a modification of the old with the strains removed; a modification not necessarily consciously devised, for it may be created by a process of unconscious action, that is, by natural group forces. Economics from this aspect is concerned with the economic habits that have been formed by various peoples at various times in tackling various economic problems.

A historical "phase"—an economic civilisation—is not a static thing, the relations of which with other phases can be adequately studied by comparing them and noting resemblances and differences. The essential thing about historical "phases" is that each of them gives place to another; not because one is violently destroyed by alien forces impinging on its structure from without by war, or within by revolution, but because each of them while it lives is working at turning itself into the next. One phase changes into another because the first phase was in unstable equilibrium and had, in itself, the seeds of change and, indeed, of that particular change. Its structure was not at rest; it was always under strain. I am, of course, referring here to a changing system and not to a static one. The internal strains to which a given economic system is subjected in its process of growth, and the means by which it "takes up" these strains or prevents them from breaking it in pieces, form the subject matter of what, for want of a better name, I call "Group" economics.

"Where there is no strain there is no history," observes Professor Collingwood. An economic system does not get going by the application of a pre-determined set of static formulae. It works itself out by the dynamic act of *living*. Like parties united in face of the enemy, the parts of the system are kept together by dint of a certain necessary compromise. Whenever the compulsion to co-operate slackens, a struggle between them commences. The saying attributed to Heraclitus that "War is the father of all things" is also another way of saying that antagonism is the cause of all growth, that harmony is born only of a conflict of forces.

There is, of course, no justification for the view that group phenomena dominate human affairs. It is possible for a single unpredictable

discontinuous event to alter the course of human history. A single nucleus dropped into a cooling liquid can start a crystallisation which in time alters entirely the condition and organisation of the whole. Like every thunderstorm and every tornado, every major change in the evolution not only of the organs of plants and animals, including man, but also of the social and economic organisation of their populations, has depended upon something which started from quite a small beginning.

Religions afford vivid examples of crystallisations of this kind in human history. They come into being at times of crisis as the sudden creations of individual men or moments. There is a transformation, either unique or by stages, but no gradual coming to birth. In the secular sphere we also find moments of crisis when unsuspected forces awake in individuals; a host of institutions from which life has long since departed are swept away; there is a triumphant blossoming forth of new vitality; the historical process is suddenly accelerated; developments which otherwise might occupy centuries emerge in a few months or weeks and are fulfilled. These individuals may be termed the *organisers* of group changes.

In the present book we are concerned less with the behaviour of these organisers than with the course of the group changes which they help to bring into being.

The statement that man is subject to group laws, and that, so great are some of the regularities of group behaviour, future events can often be forecast, may worry some people. They will retort that a human society is made up of free and independent units able to act as they please; its conduct is, therefore, unpredictable. But the two views are not necessarily mutually inconsistent.

We can, if we please, describe human events in terms of the behaviour of apparently free-moving independent *units* or, alternatively, they can be described in terms of *group* behaviour. Our choice will be determined by the particular features of that behaviour which happen to interest us. It is, however, important carefully to distinguish between these different "levels" of organisation, and the information which each supplies; in particular not to fall into the error of trying to describe events at one level in terms of those of another. So far as economics is concerned, investigations up to date have been principally confined to the "unit" level. I am suggesting that we should

greatly enhance our understanding of economic behaviour by conducting investigations at the next higher level—the social or economic “group” level. This is to follow the practice of the biologist who is careful to distinguish between the *quality* of the problems of organisation and development that arise at different levels. Within the individual cell he is concerned with the microscopic machinery of the genes and the chromosomes, the mode of cellular aggregation and tissue growth; at the “individual” level with the type of reproduction, the way of life and the method of development; beyond the individual level, the size and structure of the group of which the individual is a unit, and its relations with other groups—all these and many besides have their effect on evolution.

The groups or societies in which human beings live almost invariably possess a more or less determinate structure. Mobs do not remain in being for more than a few hours unless they develop a structure. Structure arises as soon as people begin to do something together. All civilisation depends ultimately upon the establishment of social routines and their accompanying structures. Not all groups have a formal structure but there can be no such thing as a persisting group devoid of some kind of informal structure. Social routines are usually highly complex and are built up more by habit and custom than conscious will, and there is no better way of failing to understand social phenomena than to assume that each action or thought happens because of some one cause.

Few realise the extent to which our social and economic lives are determined by routine and custom—the repetition of more or less regular sequences of group movements. Indeed, in a modern congested industrial society, man is so ringed about by custom that it is becoming increasingly difficult to distinguish the individual from the herd. Regularly he gets up every morning at much about the same time, goes off to his daily work by bus, train or tram, breaks off for a mid-day meal and rest, returns to work in the afternoon, back home in the evening, a meal, then a visit to the club, cinema, or “pub,” a pipe, a drink, and so to bed! This routine is so regular that, even when allowance is made for individual variations in personal habits and interruptions due to illness and accident, those who cater for man’s various requirements of materials, food, drink, transport and amusement, experience no difficulty in

making calculations beforehand of the national "group" requirements within a very narrow margin of error. Indeed, it is not too much to say that the orderly organisation and conduct of modern society depends on group statistical calculations on matters of this kind. This statement covers not only such things as insurance, but also the operations of industry and public services.

In all these group studies, the question concerning the behaviour of any one particular constituent member of a group which is being studied will be answered by applying to him some general regularity of the group as a whole, expressed in terms of a probability. The practice of insurance companies may be quoted to illustrate the point.

The group that is being studied is likely to be unconscious of the fact, or that its regularities of behaviour are known or that, as a result, its desires are being directed and controlled. But control goes even further than this; for those responsible for running society will deem it their duty to look *ahead* and arrange for future group regularities. Raw material and food supplies must be organised and systematic transport, communications and public services arranged. Thus, to cater for one set of regularities involves arranging for other and future types of regularities, and it is these that are taken for granted by the individuals, to supply whose needs they are provided.

Ignorance of the part played by group laws in modern societies has been the cause of much political and economic confusion. As Hyman Levy has recently observed:—

"The complexities and confusions of modern social life are associated with the fact that we do not yet appreciate the consequences that flow from the establishment of such regularities as are made by man. They are set up for one purpose, and have, in addition, other systematic effects that are of no interest, and may even be unknown to those who have set them in being."

Custom has been called the "habit" of society, and since habit changes, it must be regarded, not as something fixed, but as a process with a "before" and an "after"; that is to say, it is a historical process, which is conditioned by past activity as well as by present conditions, and so always incomplete. But, because custom both changes and is incomplete we cannot dismiss it as something evanescent and unimportant, any more than we can dismiss the structure of

plants and animals, or their habits, as unimportant because they, too, vary.

Every society has a history and its structure will be determined by that history. Its history will have two aspects: (1) custom, that is, approximate repetition in similar circumstances, and (2) a degree of freedom, permitting custom to be modified and evolution to continue.

What do we mean when we speak of custom? The answer is, "society." "The very notion of custom implies society," says J. C. McKerrow. It is primarily *society*—not the individual—that has customs. It is society that endures, while the generations comprising it pass. It is society that "learns better," over the period of years, in virtue of the ability to modify custom. It is society that continues and acts as a "whole," unless it disintegrates and ceases any more to be a living "organism." Society may, as a group, do things that are distasteful to every single individual in it and against his personal interests as such. It may, for example, declare war even though each person in that nation may as an individual neither hope to derive any benefit from it, nor wish to risk being killed or suffer loss for the national objective involved. So there has always to be a compromise—a balancing of individual and communal interests. Collective living for human beings appears always to have been in the nature of a compromise between their natural desire as individuals to conduct their own lives in the manner they pleased and the necessity to work together imposed by numbers in relation to territory, and the benefits to be derived from a group system of exploiting the economic resources of that territory.

The only way of finally resolving this opposition is a union in a new way of the individual and the community. The solution commended by nature is to imitate the social insects, like the bee and the termite, and abolish individuality, as we know it, by absorbing it into a larger unit where it will have no meaning. In these insect communities the social group itself as a whole constitutes the biological unit. Each individual in the group lives its life and makes its contribution to the communal welfare because there is no alternative open to it. The community is made up of castes that are differentiated functionally and, from the point of view of general behaviour, have to do certain things in the common interest. Individuals,

seemingly, have no yearning to alter their station in life; indeed such a yearning can have no meaning for them. In such a form of social organisation no vestige is left of what we understand by *individual* incentive, opportunity or originality. The basic objective is to ensure the survival of the *community*; whether the individual survives or not does not matter, except in so far as he may happen to be the sole representative of some highly specialised function such as reproduction. Admitting that these insect groups may have certain obvious points of superiority over our own social patterns, especially their greater efficiency and stability, it does not follow that they are acceptable. Nevertheless, in the absence of suitable alternatives man may with the passage of years find himself impelled to evolve further in the direction of these insect patterns. Just as these insects devote themselves to the service of their community, so human beings can, and do, realise themselves more fully in causes wider than themselves.

CHAPTER II

ON BEING A CONVENIENT SIZE

The scientist no longer studies “things” but “changes”—movements of a group from one condition of stability to another. It is this circumstance which enables him to make predictions. For the number of ways in which a group of units can be arranged to serve a particular purpose will usually be limited, and changes from one type of arrangement to another will have to conform to some kind of order or sequence if the group as a whole is to maintain its unity and not disintegrate.

Suppose, for example, we wish to group units to form stable solids of regular shape, then the laws of mechanics will tell us that only five regular solids are possible. Again, having discovered that an atom is made up of a central positive electric charge surrounded by a ring of satellites consisting of rotating negative charges, physicists are able to calculate that the number of possible stable arrangements is the same as the number of different chemical elements found in nature. And, true enough, the many thousands of different kinds of matter to be found on this planet when examined closely turn out to consist of no more than ninety substances—the elements, as they are called. Like the musician who is able to produce many melodies from a few simple notes, nature seems able to produce a large number of compounds from relatively few elementary substances. But there will always be a limit; a limit which will depend upon the function that the new arrangement is designed to carry out.

To take a homely example, let us suppose that our purpose is to arrange a group of spectators to view a football match. Given that the intention is that as many people as possible should view the match conveniently, it is clear that the number of ways in which the seats or other form of accommodation can be arranged will be limited; the seating accommodation of practically every football stadium conforms to the same common ground-plan. The more people are accommodated in a given stadium the less freedom of movement and comfort each individual spectator will be able to enjoy. For every seating arrangement there will be a limit to the

number of people who can be conveniently packed into it. If we try to circumvent this limitation by pulling down the existing stadium and building a newer and larger one, then, since this enlargement of the stadium automatically involves increasing the radius of the circle of seats from the centre of the field, it will mean that though more spectators can now be accommodated this increase will have been secured only at the expense of giving the average spectator a worse view (i.e. a more distant view) of the match than in the old stadium.

The dynamic movements of a crowd are subject to similar limitations. Relative movement in one direction in one part of an enclosed crowd will be possible only if there is an equivalent movement in the contrary direction in some other part of the crowd. (I refer here, of course, to movement *inside* a crowd and not to that at its boundaries, where different considerations arise.) The rule will operate even in the cases where the crowd as a whole is in motion, for, so long as the crowd continues its existence, there will be a limit to the extent to which any one individual or group of individuals can move in any direction *faster* than the crowd as a whole. It follows from this that relative movement—unless extremely slow—by a section of a crowd in a particular direction invariably generates an opposing resistance if it proceeds beyond certain limits. Population growth exhibits this clash between growth and resistance to growth very clearly. In the case of these dynamic changes also there will be a limit to size, for, if growth proceeds to the point at which resistance to growth is overcome, the boundary of the crowd will be disrupted—that is to say, the crowd will cease any longer to behave as a single unit or whole.

Experience shows that it is extraordinarily difficult for a group to continue to grow in size beyond a certain point without a breakdown taking place. This is due to certain purely physical considerations governing crowd formations. Looked at purely as a “physical” pattern, it will be obvious that the form and changes of form of a crowd in its process of development and growth can be regarded as being due to the action of forces. The arrangement of the units in that crowd will be determined by the interaction of those forces. Some of these forces will tend to hold the crowd together, while others will tend to disrupt it. As a crowd grows in size a struggle will develop

between these two sets of forces. The outcome of this struggle will determine the form or structure of the crowd.

We are taught in elementary mathematics—and by Archimedes himself—that in similar figures the surface increases as the square, and volume as the cube, of the linear dimensions. In other words, the greater the radius (or larger the sphere) the greater will be its volume or its mass in comparison with its superficial area.¹

So, in Lilliput, “His Majesty’s Mathematicians, finding that Gulliver’s stature exceeded theirs in the proportion of twelve to one, concluded from the similarity of their bodies that his must contain at least 1728 (or 12^3) of theirs and must needs be rationed accordingly.”

From this elementary principle it follows that though growth in length (let us say) and growth in volume are parts of one and the same process, they will proceed at different rates. For instance, a fish, in doubling its length, multiplies its weight by no less than eight times; and it all but doubles its weight in growing from four to five inches long. If we build two bridges geometrically similar, the larger is the weaker of the two. Over 300 years ago Galileo said that if we tried building ships, palaces, or temples of enormous size, yards, beams and bolts would cease to hold together; nor can nature grow a tree or construct an animal beyond a certain size while retaining the proportions and using the materials which sufficed in the case of a smaller structure. The thing will fall to pieces of its own accord or will at length become clumsy, monstrous and inefficient.

Thus growth in size automatically involves a progressive unbalancing of the forces on whose co-ordination the stability of the whole structure depends. Accordingly, if an animal or other structure is to maintain its general shape, that is to say avoid a breakdown

¹ If we take the simple case of a sphere, with radius r , the area of its surface is equal to $4\pi r^2$, and its volume to $\frac{4}{3}\pi r^3$; from which it follows that the ratio of its volume to surface or V/S is $\frac{1}{3}r$. That is to say V/S varies as r ; or, in other words, the larger the sphere, by so much the greater will be its volume (or its mass, if it be uniformly dense throughout) in comparison with its superficial area. And, taking L to represent any linear dimension, we may write the general equations in the form

$$\begin{aligned} S &\propto L^2, & V &\propto L^3 \\ \text{or } S &= kL^2, & V &= k'L^3, \end{aligned}$$

where k, k' are “factors of proportion.”

in its basic framework or skeleton, there must be a limit to the size to which it grows.

For every type of structure there will be a most convenient size, and a large change in size inevitably carries with it a change of shape and structural materials. This group law has been found to operate to limit the growth in size of shapes, patterns and structures of all kinds, whether man-made or found in nature.

Over a thousand years before Galileo, Plato in his *Republic* had applied the same principle to political systems. He recommended that rulers must find the "best principle for determining the size of the State and the proportionate amount of territory beyond which they will not go; the State should be allowed to grow only so far as it can increase in size without loss of unity."

The same principle applies to bodies in motion: there is a steady, progressive diminution of activity with increasing size. It also governs the structure of appliances made by man, like the aeroplane. In so far as economic systems contain physical structures, these structures also will be affected by similar conflicts between bulk and area and, if allowed to grow beyond their "convenient" sizes, will break down.

The modern city, one of the typical structures of the present-day economic system, affords many vivid examples of conflicts of this kind. As its radius increases, the roads and other channels of distribution will increase with it, but, since its area will increase by the square of the radius, the volume of goods and people to be transported will tend to increase at a proportionately faster rate than these channels. To widen the roads and increase their carrying capacity to meet the situation will become more and more difficult as the town increases in size and density. The point will come when either the town structure will break down and in place of the original town, with its channels of distribution running from the centre to the outskirts, we shall get a dead central area surrounded by a ring of more or less self-sufficing suburbs, or steps will have to be taken to check growth before this stage is reached. The position is well seen in the present condition of a city like London. As its radius has increased, we have widened and duplicated its roads, but the volume of traffic to be carried has tended to increase more than in proportion. The point has been reached in certain areas where the roads cannot be

widened still further without encroaching on the housing space and other amenities of the consumers whom these avenues of transport are intended to serve. If these consumers are to maintain—and continue to raise—their standard of living, they must be rehoused without an increase in their rent or rates. This is impossible. The best that can be done is to build blocks of flats on the restricted sites, to be filled partly by the old tenants of the area, who now have to be satisfied with less space, and partly by *additional* tenants (i.e. tenants from outside the area) who must be brought in to assist in defraying the cost of the new building, if the older tenants are not to be mulcted of excessive rents.¹

These additional numbers will tend to re-congest the roads

¹ According to the Barlow Commission (Cmd. 6153, para. 144), "In the very large towns the cost of the central sites is so high as to prohibit their use for the erection of working-class houses otherwise than in blocks of flats. Even when the land is used intensively in that way, the cost of the building must be heavily subsidised from public funds if the rents are to be brought within the means of the persons for whom the new accommodation is required."

Of the widening of streets in densely congested areas like the City of London, they quote Sir Charles Bressey as saying in the Greater London Highway Development Survey (1937)—"The cost of comparatively insignificant street widenings sometimes works out at a rate exceeding £2,000,000 a mile, and even this leads to no conclusive results, as is shown by the recurrence of widenings in the same streets by successive generations." (ibid. para. 193.)

What the redevelopment of a town involves in expense and reorganisation can be seen from the following catalogue of the contents of a medium-sized area of 300 acres taken from actual conditions by Mr. H. J. Manzoni, City Engineer of Birmingham:—

"Nearly 11 miles of existing streets, mostly narrow and badly planned.

6,800 individual dwellings, the density varying locally up to 80 to the acre.

5,400 of these dwellings classified as slums to be condemned.

15 major industrial premises or factories, several of them comparatively recent in date.

105 minor factories, storage buildings, workshops, industrial yards, laundries, etc.

778 shops, many of them hucksters' premises.

7 schools.

18 churches and chapels.

51 licensed premises.

Many miles of public service mains, water, gas, and electricity, including over a mile of 42-inch trunk water main, nearly all laid under carriageways and consequently in the wrong places for good planning. Add to these a railway viaduct, a canal, a railway goods yard and a gas works, and you have a beautiful problem in redevelopment." (1941 Conference of the Town and Country Planning Association.)

recently widened. Attempts to overcome this problem by speeding up the movement of transport will encounter similar difficulties, while to construct still more overhead, surface, or underground roads will necessitate imposing a tax (i.e. taking away part of the increased standard of living gained in other directions) on users to defray their cost, a burden which will become increasingly disproportionate to the benefit conferred as congestion increases. What is true of a single town is true of an economic system as a whole.

But size operates in another way. We find that there is an essential difference in *quality* between the phenomena of form in larger and smaller "scale" organisms. Even the narrow field of physical nature studied by the biologist is wide enough to include three such distinct and discontinuous "scales" as are exemplified by man, an insect, and a bacillus. "Man is ruled by gravitation and rests on mother earth. A water-beetle finds the surface of a pool a matter of life and death, a perilous entanglement or an indispensable support. In a third world, where the bacillus lives, gravitation is forgotten, and the viscosity of the liquid . . . the molecular shocks of the Brownian movement make up the physical environment. . . . The predominant factors are no longer those of our scale, we have come to the edge of a world of which we have no experience and where all our preconceptions must be recast!"¹

Similar qualitative discontinuities emerge in the course of growth of the larger aggregation of populations of animals and plants and their environments. As we trace organised life from the primitive systems of plants and animals found in nature to the complex economic systems fashioned by human endeavour, we pass through a hierarchy of worlds each separated from its predecessor by a gulf of discontinuity and controlled by forces which in some respects are peculiar to itself.

The principles which underlie this process of dynamic growth in size may be illustrated by taking one of the simplest possible forms of group arrangement: a heap of sand. If we attempt to increase its height by pouring more sand on it, we shall find that to begin with the pile will mount higher and higher on its existing base. The growth will be a stable one. Soon, however, the heap becomes too narrow for the height. A critical stage of transformation is being approached.

¹ Sir W. D'Arcy Thompson. *On Growth and Form*, p. 77.

Suddenly, the top of the pile will collapse and the sand will pour down the sides, widening the base, and a new stage of stability will be reached. From the new position of stability a still larger pile can be made to grow until, at an even greater height than before, a new critical size will be reached, when there will have to be another collapse to a still broader basis if growth in size is to continue. For a particular breadth of base there is a maximum height that is just stable, in the sense that if on that base the height be still further increased by pouring additional sand on the top, a collapse will occur almost immediately. Thus, as the sand is poured on, there are alternate stages of stability and instability: relatively long periods of stable growth succeeded by short sharp stages of instability. It will be clear that it will make no difference whether our heap consists of sand, earth, stones, ants or even human bodies. It is the *heap* that behaves in this way, and the quality of that behaviour does not depend on the qualities of the constituent units.

The above simple example illustrates a proposition which is true of all growing processes in nature. As it grows in size over a period of time, every arrangement or group of units will pass through an alternation of periods of continuous growth and periods of instability and breakdown—followed by reconstruction.

It will be obvious that the cause of the periodic collapses is that as certain critical sizes are reached the forces holding the group together are overcome by those pulling it apart. These two opposite forces, which are often generalised under the terms centripetal and centrifugal forces respectively, are essential factors in all forms of group growth.

If we wish to build a heap of sand on a given base higher than that possible in our simple experiment, we must discover some method of reducing the centrifugal forces. We must, for example, surround our heap with wooden shuttering. But, of course, as in the case of the original heap itself, there will come a time when the tower of shuttering itself will attain a height at which it will become unstable and, if taken beyond that height, it will collapse in its turn. Alternatively, we may employ a little cement and make our sand into bricks and then from these larger and more stable constituent units construct a wall or even a complete building of considerably greater size than would be possible by using such small and mobile units as grains of

sand. But here again, beyond a certain limiting size, stability will be lost—and still larger bricks or building blocks will have to be made if growth in size is to be extended. The sequence in nature has been first to use the ultimate electrical particles to build up atoms, then atoms to build up molecules and molecules to build large colloidal particles, cell-constituents and the like. These in their turn are employed to make the living cell. Above these levels, cells form organs and tissues, the latter combine to form the functioning, living body; and the bodies of animals, especially men, are the bricks employed to build communities.

It would be a mistake to assume that the forces controlling growth in size always operate in as simple and straightforward a way as in the case of a sand-heap. To mention one difference only: in the case of the sand-heap, growth is brought about by someone *outside* the pile adding sand to it. In living things, the forces of growth operate from *within*; that is to say, growth is controlled by a process of internal regulation. Growth in this case is not a question of adding fresh sand to the outside of an existing pile. The organism that grows first absorbs substances suitable for growth into itself and then, having transformed them into suitable “building” materials, passes these materials in suitable quantities and proportions to the “building sites” or growing points where they are required. The fact that a system is self-regulating will not, however, absolve it from obedience to the same mechanical laws as apply to a heap of sand. It will be able to continue growing only so long as it is able periodically to change its form and constructional materials as it increases in size, or—more accurately—only so long as it is able to effect without breakdown the discontinuous changes required to enable it to pass from one “critical” size to the next. This will often prove extraordinarily difficult. For the necessity of keeping any shape at all in a *growing* organism means that certain definite *relative velocities* have to be maintained between growing processes in different parts of the pattern. If the organism has a pyramid shape, then the base and the height must not only grow together, but the base must grow faster in the proportion of two to one. If the shape to be maintained is spherical, then, as its radius doubles, its outside surface must in proportion grow twice as fast and its volume eight times as fast to maintain the same structure as before. What this means when trans-

lated into the practical terms of the working life of a living cell is that when a cell doubles its linear size, the bulk to be nourished increases eightfold, while the surface through which the nourishment has to be absorbed increases only fourfold. Moreover, if the object that is growing is an animal or a plant made up of many cells, every individual cell in the inside of the sphere must be provided with adequate food if the whole is to go on living. As the organism grows, that is to say, as the cell population increases, the supply for each cell will tend to fall off—unless there is a radical change of structure—owing to the disproportion between surface and volume. Food supplies will exist in abundance, but the organism cannot get at them. It is in the same situation as a country dependent on foreign trade, whose ports and transport facilities fall progressively behind the increase of its import needs. And that is by no means all that happens. “Simply magnify an object and without meaning to you have changed all its properties”, observes J. S. Huxley.

There are many other reasons why a large structure can never be a mere scale enlargement of its smaller relatives. In animals the relative size of many organs decreases instead of increasing with total absolute bulk, so that in a big animal they do not have to be so large as in a small one. One reason for this is that the rule in regard to the limitation of size applies not only to complete animals but also to their separate organs. If an individual organ grows beyond the size convenient for the function it has to perform, it will be useless—i.e. break down as a functional structure. The small eye of the elephant is a case in point.

Nature's attempts to dodge—or rather to postpone—the operation of the law of size have taken three main directions. The first has been for the organism to grow by spreading itself out in one plane. In such a case, surface and volume will increase in about equal proportions. But, if this is carried beyond a certain point, there will inevitably be a tearing apart or splitting up of the whole into separate pieces. Each piece must then either be capable of functioning as a complete individual or die. This, as we shall see later, has also been the fate of economic systems which have endeavoured to expand without limit in this way. A second and more satisfactory procedure has been to divide the whole into two when it reaches a certain size. By this means, although the total bulk of the whole is left unaltered,

the total surface of the whole is increased by 50 per cent; so that now the two halves can start growing again until they, in turn, reach the limiting size. In the higher organisms, like man, there is a third method which is in effect a modification of the second. The parent creates a new individual out of itself before it has reached the moment of breakdown in its own structure. What survives in all these cases, therefore, is not the unit but the *pattern* of the species. There is only one kind of working pattern for each species and this repeats itself in a recurring cycle. It is this pattern or inner principle of unity separating the species off from the rest which really constitutes what we mean when we speak of "individuality"; otherwise there is a mere aggregate.

When the central nervous system reaches a certain degree of complexity, mental phenomena emerge, until the elaborate psychological life of man is attained and the new types of individuality called "Social Communities" become possible. Man can easily enter into more than one of these "individualities." A man can very well be at one time a member of a family, a race, a club, a nation, a literary society, a church and an empire; while it is true that some of these systems possess only a glimmer of "individuality" they undoubtedly exhibit the tendency towards the formation of *closed systems*. That their individuality is no mere phantasia we must own, when we find the law after centuries of opposition recognising the existence as single beings of "corporate personalities." While it yet remains true that by comparison with an animal or plant a human society is only a very primitive type of "individual," its success—and continuing existence—as an effective economic instrument seems to depend, not upon a weakening, but upon a progressive strengthening of the element of "group individuality."

We are surely entitled to carry this line of thought to the point of presuming a historic unity of the universe in its evolution from primitive chaos to the emergence of human economic societies. Those who question the propriety of including economics with biology need to be reminded that in its broadest perspective biological evolution in animals and plants is defined by biologists as "the process by which the utilisation of the earth's resources by living matter is rendered progressively more efficient. The exploitation of the earth's natural resources has progressed in two complementary

ways—by improvements in the basic mechanisms of exploitation, and by adapting a given basic mechanism to every possible kind of environment. . . . The major processes in evolution thus consist essentially in a greater extension of life's activities into new areas and into new substances, and in a progressive increase of life's control over, and independence of, the environment."¹ What better definition could be found than this of the objects and purpose of man-made economic systems? But the relationship can be pressed even more closely.

In both cases a distinction has to be made between the two types of evolution: evolution by the progressive accumulation of "small-scale" modifications along an established avenue of development, and evolution by "large-scale" shifts from one "level" of organisation to an entirely new one, separated from the old by an "unbridgeable gap." Evolution along an established gradient merely results in what one may term "family" evolution—progressive subdivision and specialisation of a pattern whose basic skeleton or "tree" has been already determined. The main road has been fixed, and all that can be done is to alter the paths which branch from it. Evolution by this process not only becomes steadily more difficult as the system grows in age and complexity, but sooner or later ends in a blind alley.

The other method of growth involves departing entirely from an old path and setting forth along a new one, and consequently developing an entirely new set of by-paths.

The departure need not occur in a sharp single step; it can do so in a series of small irregular steps. However, once a whole new set of paths—a new level of organisation—has been established in this way, the process will not easily be reversed; the new arrangements will be effectively isolated from the old.

Available evidence justifies us in assuming that the decisive steps in economic evolution have been made by "large-scale" departures of this kind, by what biologists term "systematic mutations."

The distinction between these two types of evolution in the case of an industrial system of the modern type can be drawn by taking as an instance of continuous evolution the progressive improvements in factory methods of production over the past hundred and fifty years, and of discontinuous evolution the sharp changes which occurred

¹ J. S. Huxley, *Evolution*.

first when these factory methods were substituted for handicraft production and again when they, in their turn, gave way to mass-production methods. As an example of a major discontinuous change on a still wider scale we have the transformation of the British economic system as a whole from the static, predominantly agricultural, type of organisation of the Middle Ages to the dynamic industrial type of organisation which prevailed in the nineteenth century.

The position must not be misunderstood. In the perspective of time all life is and must be a continuum, not only because the basic process of life is self-reproduction, but also because every fresh organ, organism or system must be produced out of a pre-existing one. Discontinuities of various sorts, however, occur within that continuity. In biological evolution the chief discontinuities have been the cell, the multicellular individual, the species and the ecological community. This last-named unit may be said to include man-made economic systems which from their evolutionary aspect may be regarded as taking a stage further than sharp separation of communities of plants and animals into distinct, more or less self-contained, ecological systems such as are met, for example, in a mountainous country as one passes from the plain to the tree zone and thence to the treeless zone above it, finishing up with yet another distinct habitat above the snowline. In all these regions the discontinuity, though fundamental, is never absolute.

Similarly, we can link up the first appearance of life on this planet with the emergence of man-made economic systems. Starting with a strip of land emerging for the first time from beneath the surface of the sea, Dr. Leach has traced the stages by which the bare, salty, mud-flat becomes converted into a habitat for life.

"First of all silt forms an accumulation which is exposed at low tides, thus providing a suitable station for colonization by saltwort (*Salicornia europaea*) which forms an open community on the mud. The reaction of this *Salicornia* is to reduce the rate of movement of the water during the submerged phase at high tide, so that more silt collects and raises the level of the mud, with the result that the period of submergence is reduced. The grass *Glyceria maritima* then gains entry and by its numerous shoots still further increases the accumulation of silt, which it stabilises by means of its abundant fibrous roots. As the silt deposit continues to increase, the habitat becomes

drier so that *Festuca rubra* enters, successfully competes with the *Glyceria* and becomes temporarily dominant, meanwhile continuing the soil-accumulating reaction. The soil level thus becomes completely raised above the level of the water except during high spring tides. The habitat is now definitely drier and the downward percolation of rainwater reduces the amount of salt in the soil. The soil level continues to rise and soil organic matter continues to increase."

Thus, in turn and due order, a number of species of plants co-operate in fulfilling a common end greater than their own survival—the preparation of the land to enable it to support animal life. This process of colonization by a succession of species and groups of species is quite general. At each step the succeeding species establishes a higher degree of biological organisation than its predecessor. To begin with the system may be highly fluid, one species succeeding another after a relatively short interval as measured on the biological time-scale. But, as the plants increase in size and scrub gives place to forest, a condition of temporary stability will appear in the succession. This may persist over long periods of time unless the balance on which the dominance depends is disturbed by animals, including man. It is as a disturber of equilibria established by nature that man first makes his appearance as the founder of economic systems.

"Man," says White of Selborne, "in his true state of nature, seems to be subsisted by spontaneous vegetation." Primitive man is believed to have begun by living largely on the natural produce of the forest; acorns supplemented by arbutus and mulberry was one such diet. But once his population reached a certain size the demand for food would become greater than the forest could satisfy. Progress required the invention of the practice of agriculture and this required open land. Wild life and plants are more plentiful in the open than in the forest; so trees had to be cut down and land cleared. Thus from being the friend man became the enemy of the forest. But the forest was still needed because it supplied humus and water. So a balance had to be maintained because, if the forest was destroyed too fast, then the supply of humus and water dried up and the land reverted to waste and desert. This, as we shall see later, has happened many times.

Thus, if the soil and vegetation are the first grade in the hierarchy of nature and animals are the second, then the systems whereby man

disturbs the equilibria established by nature and rearranges and recombines the elements of the soil and the plants and the animals to serve his own ends are the third. The machine represents the latest stage in this process of substituting man-made patterns and forms for those of nature. Unfortunately the machine has been allowed to develop without checks and controls. Worse still, in this last stage, any organisation to control social or economic development has been treated as evil. Man, the individual, has been presumed to know what is best for himself and has been taught to believe that by serving his own personal ends he is serving those of society and improving the patterns of nature. The result is a world without checks or form. The ordered discipline of nature has been replaced by the chaotic proliferation of the machine. Only now, when it is too late, man has discovered that he has been sinning against nature's deep-seated laws.

The devouring appetite of the machine has so seriously upset the vast balanced systems into which soil, vegetation and animal life have been woven together by nature over the ages that the fertility of the soil over wide areas has been destroyed. The result has been soil erosion on a gigantic scale. If the destruction is allowed to continue at the present rate, the time is not far distant when the fertility of the soil will no longer maintain the present levels of population.

The story of this erosion can be read in *The Rape of the Earth* by Jacks and Whyte. Quoting from an official American document on the vital importance of maintaining the form and balance of nature if further destruction of the American plains is to be checked, they write: "The Plainsman cannot assume that whatever is for his immediate good is also for the good of everybody—only of his long-run good is this true, and in the short run there must often be sacrifices; he cannot assume the right always to do with his own property as he likes—he may ruin another man's property if he does; he cannot assume that the individual action he can take on his own land will be sufficient, even for the conservation and best use of that land. He must realise that he cannot conquer Nature—he must live with her on her own terms, making use of and conserving resources which can no longer be considered inexhaustible."¹

¹ There has been a similar squandering of mineral resources especially in the U.S.A.

To understand how the balance of nature is achieved and preserved, we must know something of the processes by which her store of plants and animals is built up and maintained—in other words, how the process called growth is effected.

This problem will be examined in the next two chapters with special reference to the growth that occurs in the process of raising a population or an economic system from one “critical size” to the next in the scale. We shall examine such questions as: How does new growth start? What are the factors that determine its speed of progress? How is it brought to a close? The first chapter will deal with what may be called organic growth, that is, growth under natural conditions; the second with man-controlled or economic growth, that is to say, what is meant nowadays when manufacturers speak of growth of output.

CHAPTER III

CONTROL OF GROWTH IN NATURE

The distinction between the behaviour of the *unit* and the *group* is especially important in situations involving growth; that is, increase in size over a period of time. This necessitates movement, and a group will not move in the same way as a single unit.

To take a simple case: When a single individual moves up-hill from one point to another, a straight line joining the two points will be the shortest—and likeliest—way. Similarly, his movements up and down will be a series of up-and-down straight lines. (See Fig. 1.)

But when it is a crowd that is altering its position, our lines will follow a wavy course, because, in the first place, a crowd cannot be

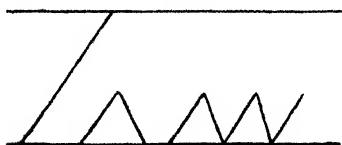


FIG. 1

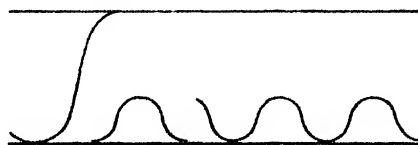


FIG. 2

accommodated at a single point but will cover an area, and, in the second place, whenever a movement begins, ends or alters its direction, there must always be a “time-lag” to allow for the change to percolate from the point in the crowd where it starts to the remainder. (See Fig. 2.)

For similar reasons the movements of a crowd cannot be recorded by the same simple forms of measurement as are used to delineate changes in the position of an individual unit. In place of a single measurement at a single point, we have to rely on a value which is a mean of the positions of a number of individual units in an area. The fact, however, that these mean values represent an average, not of a collection of isolated and disconnected units, but of units participating in a common “group” process, endows them with special properties. For example, when the French biologist, Quetelet, measured the heights of a large number of ten-year-old boys and obtained as their mean stature 4 feet 2 inches, he found in addition that not only did the measurements of all his ten-year-old boys group themselves

about this mean value of 4 feet 2 inches, but that they did so in *an orderly manner*, many departing little from that mean value and fewer and fewer departing more and more.

This condition is found to apply to all forms of "group" measurement.

The bell-shaped curve (with its reciprocal an oblique S-shaped curve), obtained by plotting group measurements of the kind made by Quetelet, is known as the "curve of distribution," or more often—as a relic of the days when scientists still confused these group measurements with "unit" measurements—the "curve of error."

The distribution which is represented graphically in Figure 3 is quite general and applies to any large group of units.

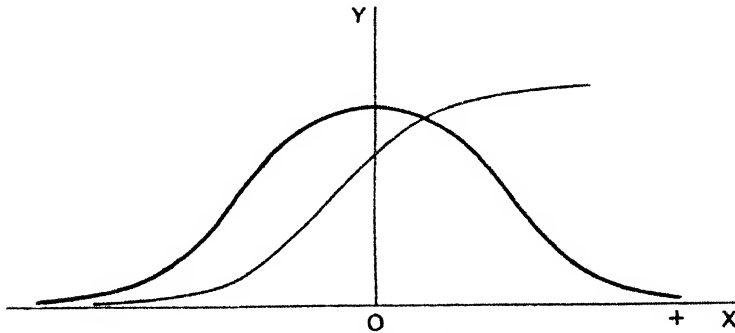


FIG. 3. The Curve of Error.

The most interesting thing about this curve is its group property—something apart from the qualities of the thing measured. This it owes to the circumstance that there is a group process at work. The curve is only concerned with the variability of magnitudes in connection with that group process. By magnitudes is meant anything that can be counted or measured.¹ If we pour a bushel of sand out of a sack, the outline or profile of the heap resembles such a curve.

The "curve of error," Lord Keynes observes, "would seem to carry the great lesson that the ultimate differences between individuals are simple and few; that they depend on collisions and arrangements, on permutations and combinations, on groupings and interferences of elementary qualities which are *limited in variety and finite in extent*."

¹ See Sir W. D'Arcy Thompson, *On Growth and Form*.

One reason for this, of course, is that what the scientist is really studying are group changes and arrangements. His experiments tell us little or nothing about the actual identities manipulated.

This explains why large numbers simplify many things. They eliminate the effects of individual idiosyncrasy and variation—not, of course, that these latter are not important at their own level. More than half a century ago, Galton wrote:—

“Many a person has amused himself with throwing bits of stick into a tiny brook and watching their progress; how they are arrested, first by one chance obstacle, and then by another; and again how their onward course is facilitated by a combination of circumstances. He might ascribe much importance to each of these events, and think how largely the destiny of the stick had been governed by a series of trifling accidents. Nevertheless, all the sticks succeed in passing down the current, and in the long run they travel at nearly the same rate.”

When we deal with dynamic problems, that is, groups actually in the process of growing and changing their form, our curves mainly depict changes in speed—an acceleration and a subsequent retardation. In this case, it has been customary to attach more importance to the S-shaped curve than to the bell-shaped. But this is simply because, until quite recently, the quantitative rather than the acceleration and retardation aspect occupied the attention of investigators.

Basically, every growth curve has the same general form. Each has the same slow beginning, the same rapid increase in rate to a maximum, followed by a subsequent slowing down or negative acceleration. One phase passes into another; there is a beginning, a middle period and an end—a process which some seventy years ago Sachs named “the grand period of growth.” One and the same curve may illustrate the growth of a sand-heap, the life of a man, the growth of a population, the economic history of a kingdom—or the schedule of a train between one station and another.

The population curves (to which we are just coming) can be used to represent self-induction in a magnetic field, or the path of a body falling under gravity; it is the same curve as was used to describe the growth of the mileage of American railways. Why do curves behave in this way? The answer is that the force of unrestrained growth is so ruthless and terrible that it cannot be given free rein in any direction

for more than a limited time if the order and "balance of nature" are to be preserved.

A certain bacillus grows up and multiplies by two in two hours time. Its descendants, did they all survive, would number four thousand in a day, as man's might in three hundred years. A codfish lays a million eggs and more—all in order that *one* pair may survive to take their parents' place in the world. Linnaeus showed that an annual plant would have a million offspring in twenty years, if only two seeds grew up to maturity in a year.¹ "But," observes Sir William D'Arcy Thompson, "multiply as they will, these vast populations have their limits. They reach the end of their tether, the pace slows down, and at last they increase no more. Their world is fully peopled, whether it be an island with its swarms of humming-birds, a test-tube with its myriads of yeast-cells or a continent with its millions of mankind." The cause of this slowing down in multiplication, it should be clearly understood, is not simply a question of food supply, for growth begins to slow down long before the food supply is exhausted. Growth, whether of a population or of an individual organism, sooner or later comes to an end because, as its speed gathers momentum, so does the strength increase of the forces that come into operation to check growth.

This general and all but obvious trend of population curves has been recognised, with more or less precision, by many writers.

Malthus was quite right in insisting that geometrical progression is the natural and common condition in a population or organism where growth is unchecked. It is found in many biological phenomena besides population growth. An epidemic declines or tends to decline at a rate corresponding to a geometrical progression; the mortality from zymotic diseases declines in geometrical progression among children from one to ten years old; and for us all the chances of death increase in geometrical progression after a certain time of life.²

Verhulst, when examining the first U.S. census returns, found that they verified the Malthusian expectation of a doubling every twenty-

¹ In a similar manner, when we contemplate the millions of human beings who have been born on this planet over the ages, founded civilisations and then passed on their way, we find the survival of the human spirit also represented to us as the survival of a *single* pair.

² According to the law of Gompertz; cf. John Brownless in *Proc. R.S.E.* XXXI., pp. 627-634. (1911.)

five years. That "grande vitesse d'accroissement" continued through five decennia, but, as Raymond Pearl was later to demonstrate, it ceased some seventy years ago and a retarding influence has since been manifest. The turning-point, or point of inflection, was reached about 1910. But it is only now—since 1940—that we can say with full confidence that retardation is actually under way. "Wars and financial crises have made their mark upon the curve; manners and customs, means and standards of living have changed prodigiously. But the S-shaped curve makes its appearance through all of these, and the Verhulst-Pearl formulae meet the case with surprising accuracy."

To appreciate the nature of the growth-controlling mechanism exemplified by these curves, it is best to start with the more elementary population arrangements. A colony of yeast or of bacteria is a population in its simplest terms, and Verhulst's law was rediscovered in the growth of a bacterial colony some years before Raymond Pearl found it in a population of men. The bacillus grows by geometrical progression so long as nutriment is enough and to spare; that is to say, the rate-of-growth is proportional to the number present. When the yeast population is allowed to run its course, it yields a simple S-shaped curve; and its reciprocal, or the curve of first differences derived from it, is necessarily a bell-shaped curve, which so closely resembles the "curve of error" that any difference between them becomes a delicate matter.

The behaviour of a population under conditions of a limited food supply is illustrated by the diagram on p. 52, which gives the results of experiments on *Paramecium Caudatum*, a small animalcule often used as an alternative to yeast for laboratory experiments of this kind.

The curve marked (1) shows growth in numbers plotted against time, curve (2) shows changes in the velocity of growth, and curve (3) measures the resistance to population growth offered by the environment. The reciprocal of this last curve will be the rate-of-growth curve of the population; it will start high up on the chart and move progressively downwards towards zero. The important thing to realise is that the growth that occurs is of a geometrical type—that is, a progressive or *multiplicative* increase and not simply an additive increase. It is this multiplicative factor which is mainly responsible for the intensity of the pressures generated in growth phenomena. Owing to the variation in the ratio of offspring to

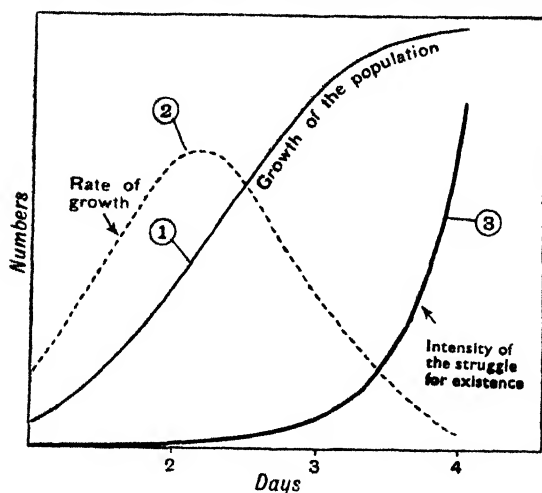


FIG. 4.

Competition in a homogeneous population of *Paramecium Caudatum*.
(After Gause.)

parents, the resistance of the environment and other factors, the actual increase is never as great as the potential. The position can be seen in the following table, which has been prepared in order to illustrate the different aspects of growth of this type. The figures are intended to illustrate what happens to a single pair of rapidly breeding animals growing over a seven-year period:—

Years	(1) Aggregate Growth	(2) Velocity of Growth, i.e. numbers added per annum	(3) Rate-of-Growth i.e. increase per cent per annum
1	2	—	—
2	8	6	300%
3	24	16	200%
4	48	24	100%
5	72	24	50%
6	90	18	25%
7	100	10	12½%

It will be observed that, while aggregate numbers increase from year to year, the velocity of growth reaches a maximum round about the fourth year. On the other hand, the rate-of-growth declines

throughout. The aspects of the growth-mechanism shown by these figures need to be carefully distinguished, especially the rising "aggregate growth" from the progressively declining "rate-of-growth." It is this last which illustrates the effects of the progressively increasing forces of resistance, which sooner or later bring all forms of growth to a standstill, whether in an animal population, a single organism, an economic system and its individual industries or, indeed, in an expanding system of any kind.

If the population could be provided with a constant environment, then the curves (1) and (2) would move upwards indefinitely—there would be no bending over at the top—while curve (3) would be a horizontal line. Growth would proceed approximately according to the law of geometrical progression or compound interest.¹ The "constancy" which this law requires is not only in the external environment, but in the *milieu interne* as well. But outside work must be done on a growing system if its internal environment is to remain constant. As this does not happen outside the laboratory, we find that in nature populations and organisms age fastest when they are young, or, to put it in a more familiar way, they develop more slowly as they grow older. Growth in size and progress in evolution accordingly depend on the possession of characteristics making for (a) the exercise of greater control over environment and (b) greater independence of environment.

A few flies (*Drosophila*) in a bottle illustrate the rise and fall of a population more complex than *Paramecium*. The colony dwindles to extinction if food be withheld; if it be sufficient the numbers rise in a smooth S-shaped curve; if it be plentiful and of the best they end by fluctuating about an unstable maximum. According to Raymond Pearl, "the population waves up and down about an average size," as Herbert Spencer had foreseen and as the differential equations of Vito Volterra explain. The growth-rate slackens long before the hunger-line is reached, crowding affects the birth-rate as well as the death-rate, and a bottleful of flies produces fewer and fewer offspring

¹ Biological growth is fundamentally of the multiplicative type. "It justifies the almost universal use of the relative differential $dW/W \cdot dt = d \log_e W$ as one most likely to give a specific expression of change in size. The estimate it provides is of the *specific growth-rate* and the special instance of growth by the compound interest law corresponds to a uniform specific growth-rate." (P. B. Medawar, *Nature*, No. 3765.)

per pair the more flies we put into the bottle.¹ It is true also of mankind, as Dr. William Farr was the first to show, that overcrowding diminishes the birth-rate and shortens the "expectation of life."² In all these cases, however, it is essential to realise that congestion must be envisaged, not as a mere quantitative increase of numbers per unit area, but as something dynamic—a progressive increase in pressure in a "group" arrangement undergoing a process of long-period historical change. Death-rates, for example, are highest in homes where there are more persons per room, not simply because they are overcrowded, but also because the later-born children of rapidly growing families have higher death-rates than the earlier, and because the economic pressure on the parents increases with the number of children in the family.³

Putting aside all its mathematical details and all arbitrary assumptions, the generalised S-shaped curve symbolises growth from childhood to maturity and old age, activity which rises to fall again, growth which has its sequel in decay. The rise and fall of growth-rate, the acceleration followed by retardation which finds expression in the S-shaped curve, are seen alike in the growth of a population and of an individual, and in most things which have a beginning and an end. But, unlike the curve of the individual life, which draws attention to its own ups and downs, the group smooths out those of the population curve. Nevertheless, the characteristic sigmoid curve is only seen in the simpler organisms, or in parts or "phases" of the more complex. There are two main reasons for this. First, the organism or population, as it grows in size, is likely to experience changes in its internal structure, and these will cause interruptions or discontinuities in its growth-curve. In the pre-natal growth of the body of an infant, for example, the S-shaped curve is clearly seen. But immediately after birth another phase begins—the

¹ Cf. D. Stewart MacLagan, "Effect of Population Density on Rate of Reproduction." *Proc. R.S. (B)*, CXI, p. 437. (1932); W. Goetsch, "Ueber wachstumshemmende Factoren." *Zool. Jahrb. (Allg. Zool.)*, XLV, pp. 799-840. (1928.)

² Dr. Farr, *Fifth Report of the Registrar General*. 1843. p. 406. 2nd ed.

³ Similarly a recent study of infant death-rates in the County of Durham suggests that the fall in the still-birth and neo-natal death-rates is due primarily to the fall of the birth-rate, as was also the fall in the death-rate of married women. "In other words we are largely improving the health of the individual by the process of exterminating the race." (C. M. Burns, *Infant and Maternal Mortality*. Dept. Physiology, Univ. Durham. 1942.)

period of slower but almost steady growth in boyhood. A third phase is implicit in the spurt of growth which precedes puberty. Then comes a gradual arrest of growth as the boy reaches his full height and attains manhood. In short, it is a common thing for one wave of growth (or cycle as some call it) to succeed another, whether at special epochs in a lifetime, or as often as winter gives place to spring.

The second reason why the simple S-curve is not often seen in the more complex population arrangements is that the conditions of the external environment are almost certain to be changing also. Indeed, it is largely by this means that population growth is brought under control. The maximum size of population for a given environment is, accordingly, not something that can be defined by reference to number or some other quality of the population alone. It is a ratio. The two elements in that ratio are the growth of population and the growth of the environment regarded as a source of maintenance for that population. The equilibrium position which is striven after is, like that of the sea, a fluid one. It is the result of a balancing of the pressure of a wave of population growth against the pressure of a wave compounded of the various elements of resistance offered by the economic environment to the accommodation in it of more people.

The law governing the behaviour of mobile groupings of this type is known as Le Chatelier's Principle, or the law of mobile equilibrium. It was first discovered as a result of experiments made with chemical groups in what are known as "reversible" chemical reactions. The law states that in any system which is in stable equilibrium the exertion of any force which tends to alter the disposition of that system will bring into operation forces tending to maintain the *status quo*. For instance, if we take a complex chemical molecule which when dissolved into water splits up in part into its constituents and we know that this decomposition is accompanied by an increase in volume, then the law tells us that an artificially produced increase in pressure will inhibit the decomposition, and vice versa. A population obeys the same law. Its growth in size brings into operation in the economic environment forces tending to check that growth; these forces increase in intensity the denser the population becomes. It is not surprising, therefore, that as Verhulst, Raymond Pearl, Lotka, Volterra and other expert investigators have shown,

its behaviour can be described by the same types of mathematical equations as are used for chemical equilibria. This is because the growth of a population is at every moment of time determined by the relation between the potential rate of increase and the "environmental resistance." Since in nature conditions never remain the same for long, a population will not achieve a permanent equilibrium with its environment. A state of equilibrium will be approached, but it will never be attained. "An everlasting ebb and flow, a mean level or a tide is our nearest approach to equilibrium."

Experiments, however, have been carried out both in the laboratory and in the field on selected populations of such widely separated organisms on the biological scale as bacteria, groups of cells, living tissues, swarms of insects and vegetable and animal groups. Their behaviour in all cases reveals the existence under controlled conditions of an optimum population for a given environment. Human populations also have shown a general tendency to conform to the same curve, but, owing to the impracticability of making any uniform conditions of environment and securing the elimination of extraneous factors affecting growth, such as is possible under laboratory conditions, the fit is usually not particularly good. The best results have been secured from statistics relating to the growth of single towns specially selected because their growth has been relatively unaffected by extraneous disturbance.

In all these cases, let us be clear, the check in growth is due to a group or pattern of factors which can best be referred to collectively under some such heading as the "forces of congestion" or "environmental resistance." It is necessary to emphasise the composite character of these checks, as too many investigators still waste their time seeking for a *single* cause of population changes. What it is even more important to remember is that the relations of a population to its environment are conditioned not only by their state at a given moment but also by the powerful influence exerted by the past history of the system. As Gause points out—"In thorough field observations the fact which strikes the observer most of all is the extreme complexity of the communities of organisms, and at the same time their possession of a definite structure. On the one hand, they undergo changes under the influence of external environment, and on the other the slightest changes of some components produce an

alteration of others and lead to a whole chain of consequences.”¹ The balance of forces within the group will change over time; some which start by being strong may grow weaker and some of the weak may become more powerful as the group as a whole increases in age and complexity.

The modern method of dealing with epidemics provides a simple illustration of the differences between the “group” and “individual” approaches to population problems. In dealing with the prevention of epidemics, doctors are not so much interested in the treatment of the individuals who have actually caught the disease; they concentrate their efforts on decreasing the probability of the causative parasite travelling from infected to non-infected by changing the distribution of the population subject to the risk, lessening the population density, reducing the proportion of susceptible persons by vaccination, and in other similar ways. In no case—it is important to note—is it necessary for them to reduce the probability to zero. The epidemic system is an unstable equilibrium. If doctors tip the balance far enough in favour of the hosts, the system itself will do the rest, and the disease will tend to become very infrequent and may sometimes disappear. In a state of nature, whenever a population exceeds a certain critical density within a given environment, it is common for an epidemic to break out. This, incidentally, was the principal check on excessive growth in mediaeval towns.

So widespread is the tendency of population growth to cause congestion that, wherever there are even the beginnings of a social organisation among animals, the group, as well as its component individuals, will be found to have an interest in restricting the free movement and behaviour of individuals to prevent them from interfering with one another’s living space. But this, of course, will be possible only so long as the density does not become too great, for after a certain point these restrictions will themselves add to the pressure of congestion. It is all a question of balance—maintaining a ratio. As Stewart MacLagan has demonstrated in the case of certain insects, there is an optimum density; below it a certain amount of crowding accelerates, while above it further crowding retards, the rate of reproduction. The position may be summed up by saying that all observers are now agreed that high density of population goes with

¹ *The Struggle for Existence*, p. 12.

low fertility. Difference of opinion arises only about the details of the process by which equilibrium is affected.

The ways of nature are manifold. Psychological as well as purely physical influences play their part, though their operations may not be directly measurable by any recognised standards. Ivan Pavlov's work has demonstrated how the activity of the nervous system in the higher animals is directed, on the one hand, to integrating the work of all parts of the organism and, on the other, towards effecting an equilibrium between the organism and external conditions; the latter is the more complex and delicate. One may perhaps detect the operation of psychological influences of this kind among human beings in connection with the situation created by the increasing multiplicity of competing commodities and diversions in modern industrial societies, in particular in relation to the decline of the birth-rate. For example, to-day a married man of moderate means may have to choose between having another baby or spending the money on a motor-car; or having, say, one child for whom he will be able to afford a first-class education, or having a number who will have to be satisfied with a third-class one; or, if he looks to the more distant future, between providing relative affluence for one heir after his death, or leaving a pittance to each of a number. The consequences of this form of psychological congestion are generalised in the following observation: "You may provide crèches, school feeding, family allowances, holidays with pay for expectant mothers and a thousand and one other inducements. If you do not give people space, you will not make parenthood endurable. As a parent, I have no doubt whatever in asserting this, that five children in a house surrounded by its own garden in a locality where there is little traffic are far less trouble than one child in a London flat." (Hogben.)¹

To-day a man who has more children than the other members of his social class will find himself falling in the social scale. The prev-

¹ Actually a vicious circle is started, for this decline in the size of the family reacts in its turn on the rate-of-growth of the environment, considered as a source of maintenance and employment. As Professor Schumpeter observes: "The capitalist order entrusts the long-run interests of society to the upper strata of the bourgeoisie. . . . The bourgeoisie work primarily in order to invest. . . . With the decline of the driving power supplied by the family motive, the businessman's time-horizon shrinks, roughly, to his life expectation." (*Capitalism, Socialism and Democracy*, p. 61.)

absence of birth-control to-day is, consequently, a result, rather than a cause, of the underlying conditions making for a decline in population. The fall in the birth-rate is certainly not due to direct contraception alone, as is shown by the fact that it began in Southern Ireland, where contraception is unknown, earlier than in any other European country. Besides, some of the larger cities of Europe were incapable of reproducing themselves long before a decline in national fertility began. The position may be summed up by saying that experience shows that, whenever a population reaches a certain critical density, forces will come into operation tending to reduce that density. If one method or set of factors fails to reduce numbers, then others will do the trick.

Unfortunately, the diagram on page 52, though it may help us to understand how a single population will react to the forces of congestion, provides a picture of only half, as it were, of the life-history of an economic system. It assumes that the population is growing but that its food supply, expressed in the crudest form, namely the environment, is stagnant. To represent correctly the life-history of an economic system, we must allow the food supply also to suffer changes in its rate-of-growth, though not necessarily at the same rate or with the same amplitude as the population. As we saw just now, the problem is to keep the ratio between them from straying too far outside certain limits. The fluctuation to which changes in this ratio can give rise under natural conditions is shown by certain experiments on fishes. Let us take two populations of fishes, one feeding on the other. Call them the cod and the shark. It is found that, while the shark are few, the cod multiply. When the cod are plentiful, the shark wax fat and multiply in their turn. The voracious hordes then proceed to play such havoc with the shoal of cod that the number of the latter dwindles to the point at which the shark become short of food and die. The few cod left have time to breathe and breed again; and a fresh cycle slowly begins.

Experiments of this kind, which give rise to what is known as Volterra's Law, demonstrate that the complementary fluctuations in the food supply result in accentuating congestion in the population group, by periodically reducing its means of life. Natural history is full of examples of fluctuations of this kind, and of instances of populations being deprived of their sustenance as a result of overcropping of

the food supply following a wave of population growth due originally to a temporary glut of food. Improvement of hygienic conditions among both the natives and their cattle in many parts of Africa has resulted in a reduction of the natural control exercised on the growth of their numbers by natural diseases, with the result that the grass has been cropped beyond the control point at which it is able to recover rapidly enough to provide the requisite sustenance in the following year. "Dust Bowl" phenomena are one of the results.

There is thus not only an optimum rate-of-growth for a population, but also an optimum rate at which it will be safe for it to exploit its food and other resources of its territory. If the population exploits its territory at a faster rate than the optimum, it will not only ruin it, but threaten its own standard of living. The optimum population will be the smallest number of persons needed to produce and enjoy the optimum output. Enough has been said to make it clear that the maintenance of the proper balance between population and output will not be easy to achieve, even in the case of a simple economic system. So far as I am aware, this problem has not been scientifically studied in the case of any of the mature agricultural or industrial communities of to-day. It has, however, been investigated for the fishing and whaling communities of Northern Europe.

As in the case of agriculture, ever since the Middle Ages there had been, until recently, no appreciable qualitative change in the method of fishing in this part of the world, only in the *number* of fishermen. Fishing was carried on with primitive gear and mainly with small open boats, which caught only enough fish for local needs, in waters near their home port. The invention of salting and drying had led to some extension of the area fished in the case of herring and cod. A tremendous revolution took place towards the middle of the nineteenth century in consequence of a complete reorganisation of the industry following the invention of the steam engine, the steamer, the trawler, cold storage and modern transport by land and sea. These changes rendered possible the large-scale distribution of fish and an enormous expansion of fishing waters from the nearest coastal waters to distant banks. So great was the disturbance caused by this revolution in fishing that the British Government appointed a Royal Commission, which reported in 1866. It inferred from statistical investigation that "the total supply of fish obtained upon the

coasts of the United Kingdom has not diminished of late years, but has increased, and it admits of further augmentation to an extent the limits of which are not indicated by any evidence which has been able to be obtained." But, according to Dr. E. S. Russell in *The Over-fishing Problem*, the progressive increase in the capacity and range of modern types of trawlers had resulted by the outbreak of the present world war in the rapid depletion—in most localities beyond the danger point—of the populations both of "round" fish, such as hake, cod, haddock, and whiting, and of "flat" fish, such as plaice, sole, halibut and skate.

The most detailed and clear illustration of this problem is provided by the whaling industry, which has been investigated by Professor J. Hjort and his pupils. The rate of reproductivity of the whale is slow, and the technical reorganisation of the whaling industry has made it possible to catch more whales than their reproductivity permits. The total catch of whales has on many occasions greatly succeeded the optimum catch. "Where this has been the case, the continued rise in the total catch was rendered possible by the increased number of catchers and men—by an increased population. Nevertheless, the catch per boat and the men's standard of life have steadily declined—a sure sign that the stock of whales was being ruined although the total catch was rising." The future of the industry depends on solving the problem of organising the "optimum catch." The only way out of the difficulty seems to be to restrict the number of expeditions—to limit individual initiative and freedom. To permit competition to continue must involve either a further reduction of the standard of life of everyone in the industry, or the maintenance—and possible increase—of that of a few at the cost of a progressive elimination of the remainder from employment.

This relation between predator and prey, which has been one of the most important formative influences in the process of natural evolution, is, as J. S. Huxley has pointed out, "somewhat like that between methods of attack and defence in the evolution of war. In recent naval history, for example, an advance in the efficiency of big guns has immediately put an additional premium upon advance in armour-plating, and vice versa. Sometimes advance is so great that an entire method of attack or defence is rendered obsolete. The improvement of artillery led to the abandonment first of fortified

castles and, later, of city fortifications as methods of defence; machine guns and barbed-wire forced the abandonment of the cavalry charge as a method of attack."

Such radical changes have their biological parallels in the entire, or almost entire, extinction of an animal or plant group, and their economic parallel in the corresponding elimination of types of economic systems, methods of working, materials and categories of occupations. It is struggles between opposing forces of this kind that have been mainly responsible for determining the growth and form of economic systems as well as of plants and animals.

Thus far, the problem of growth has been considered primarily as a biological phenomenon; that is to say, nature has been the only controlling factor. It now remains to be seen how far the same principles of growth-control apply in the case of man-made economic systems; that is to say, systems in which human controls have been progressively substituted for those of nature. In order to take the most extreme case, the next chapter will be devoted to examining how growth is controlled in an economic system of the modern industrial type. In this case industrial output corresponds to a "population" in biological problems and the field of consumption to its "environment."

CHAPTER IV

MAN-CONTROLLED GROWTH

Ever since Adam Smith first propounded his famous theorem that the division of labour depends on the size of the market, economists have assumed that the process of economic growth is a *continuous* one. *Natura non facit saltum* was the text selected by the famous Dr. Alfred Marshall for his *Principles of Economics*. Even to-day most economists still seem unaware that growth in the size of output of an economic system or of a single industry, when examined over the whole period of its life history, will be found to take place by an alternation of periods of continuous growth with periods of discontinuity. The curve of growth, like that of the sand-heap already mentioned, starts by being more or less continuous up to a certain point (corresponding to height in the case of a sand-heap) beyond which it cannot grow unless, and until, there has been a rearrangement of certain of its structural elements to permit the system to operate on a larger "scale"—at a higher "level" of organisation. Thereafter the process of continuous growth in output can be resumed until another critical size is reached, when another readjustment of structure will become necessary if there is to be a still further increase in the size of output. The object of these changes in structure and organisation is to cause a discontinuous fall in prices of sufficient magnitude to start a fresh outburst of growth in sales. Thus growth in economic size proceeds by stages: waves of continuous growth separated from each other, and interrupted by discontinuous changes in the structure of the system as a whole. Each wave of continuous growth will have two phases: a phase of acceleration followed by a phase of deceleration. During periods of "continuous" growth, progressive increase in the quantity of output sold is induced, once the initial impetus to sales caused by the "large-scale" cut in costs following the discontinuous change in structure is exhausted, by reductions in price obtained in the main by "small-scale" improvements in efficiency, eliminations of waste, and the simplification and standardisation of practice in the various ways collectively known as "rationalisation." But there will be a limit to the reduction in costs

that can be made in this way over the years. After a time, each successive "small-scale" improvement begins to have proportionately less effect upon prices, until a point is ultimately reached when the economies obtained are too small, relative to the growing resistance of the market, to lead to any worth-while increase in the rate-of-growth of aggregate sales. Thereafter, the industrial system or industry will tend to stagnate, or even decline, unless and until some new "large-scale" reorganisation can be effected sufficient in magnitude to result either in such a major reduction in price as to break through the sales resistance by enabling the purchasing power of a new level of incomes to be tapped, or by leading to a fresh body of consumers being secured in some other way. The change-over from factory production to mass production provides a good illustration of a "large-scale" discontinuous change of this kind in modern times. It opened the way to a "large-scale" drop in prices by enabling the quantity of output per unit of labour to be increased by twice, four times, possibly ten times as much as it was before. In lesser spheres, similar results have been secured by speeding up the substitution of machinery for man-power and of more complex machines for simpler ones. For instance, the latest electric light bulb-making machine, known as the No. 399 Corning Machine, can produce more than 800,000 bulbs per day—that is, an output equivalent to that of 800 skilled glass-blowers.

It is, however, essential not to overlook the fact that success in all these cases has depended on the ability to ensure a corresponding increase in the size *and* speed of absorption of the market (i.e. a corresponding enlargement of the environment). If this increase in speed of sales cannot be secured, the discontinuous "jump" in productive efficiency may prove not to be a paying proposition. The Corning machine, for example, although it has been in operation in the U.S.A. since 1928, is said to have been far too productive to be economically of value to any European country under the conditions ruling before the present war. Similarly, Mr. Ford's mass-production methods would be absurdly uneconomical if his output were very small, and would be unprofitable even if his output were what many manufacturers of automobiles in Europe would call large, for it would be wasteful to furnish a factory with an elaborate equipment of specially constructed jigs, gauges, drills, lathes, presses and conveyors to

build a few hundred automobiles. The trouble is that technically the only way to increase the scale of manufacture *and* produce more cheaply is to produce more *quickly*. This is an unalterable physical relation which, like that between the height and base of a heap of sand, it is beyond man's power to alter.

But for tariffs (and security reasons) American motor-cars might be the only ones in the world to-day. But this would not have come about because the American industry was managed better or its leaders were more enterprising and intelligent than those of other countries, but simply because the *size* of the American market made it a paying proposition to organise on the mass-production "scale" not only such articles as motor bodies and motor engines, but also the bulk of the components that go to make up a motor-car—a practice which would be hopelessly uneconomic for any manufacturer supplying a "smaller-scale" market.¹ Indeed, the possibility that even the American market itself may not really be large enough (i.e. cannot be made to grow *fast* enough) to absorb *permanently* the output of existing types of American automobile plants is suggested by events in the U.S. after the slump of 1929. American automobile manufacturers were able to secure the requisite rate-of-growth in sales in the period between 1925 and 1929 only by anticipating at an ever increasing rate the future purchasing power of their home market by over-exploiting the hire-purchase system. When that over-anticipation had been taken to its utmost practical limits the market collapsed, showing that, even in that vast country, there was a limit to the rate-of-growth in size of the market. This is far from being an isolated instance. As we shall see presently, statistical studies of the evolution over the past hundred years of various industries in Great Britain and the United States—as well as historical experience generally—suggest that *there is a direct relation between the rate-of-growth in size of industry (not of the individual firm) and the rate of reduction in real costs*. If this be really the case, then a continuation of the slackening in the rate-of-growth of industrial output that has been under way since the beginning of the present century in this and other mature industrialised countries may mean that we cannot look forward confidently to a continuation in the future of the increasing returns to which the manufacturing nations of the world have grown accustomed, because

¹ Cf. Allyn Young, *Economic Journal* (1928), Vol. XXX., No. 152, p. 538.

the "scale", or "level" of organisation, of production has reached the maximum possible under present world organisation (i.e. size of environment). In short, as in the case of population growth, the forces of industrial growth that have been operating to expand the size of the body of material wealth in the Western world ever since the seventeenth century have shot their bolt, for the time being at any rate.

Economic growth takes two principal forms. These need to be carefully distinguished. The first may, for convenience, be called simple interest, or *additive* growth; the second, compound interest, or *multiplicative* growth—that is, growth of the same kind as the population growth discussed in the last chapter. In additive growth, the increments of new growth added remain in the state in which they were laid down. Like the storey added to an existing building, the factory to an established industry, the widening of the gauge and enlargement of the size of trucks used on a developed railway system, the new additions do not themselves release any further new growth in other directions. In multiplicative growth, on the other hand, the new material added releases a new stream of cumulative growth which deepens and widens as it pervades the system in which it occurs. Growth of this latter type in the economic field has been associated with the opening up of new territory; the institution of more effective rotations in agriculture; the introduction of more rapid and cheaper means of transport like the steamship and the railway; the invention of more productive forms of industrial manufacture as, for example, the replacement of handicraft by factory production and of factory production in its turn by mass production; the invention of new industries and processes, and the like. In all these cases, like new growth in population, the increment of new growth grew and produced new growth in its turn and, as in the case of a population also, that growth set in motion in the economic group where it took place *waves* of ancillary developments—connected sequences of linked changes. These included the introduction of new methods of production, new types of products and services, new sources of supply, new materials, new markets, and the establishment of new trade routes and channels. Each of these waves was the joint product of a new departure or innovation, a new selection of the unit factors of production, and a new recombination of

these unit factors. These three processes are complementary and their interplay is essential to the release of new growth.¹

A wave of change to be seen in proper perspective must be viewed over the whole period of the wave. It must be envisaged not as a series of more or less disconnected events, but as a *single process* of change. A wave of economic change normally conforms to a recognisable cycle of events. Like a wave of population growth, it usually starts slowly, gathering momentum as it grows. But its rate-of-growth slows down with the passage of time and the increasing spread of its flow, the multiplying factor decreasing as a regular function of economic age. Growth throughout remains of the compound interest type, even if the actual rate of compound interest is never constant but progressively decreases. It is with this form of growth that the argument of this book is principally concerned.

It will be observed that this type of growth is essentially a group process; it has no meaning when applied to an individual unit. Additive growth, on the other hand, which applies equally to the individual, is the kind of growth normally assumed in traditional economic theory. It forms an integral part of nearly all the "explanations" of the fluctuations in economic growth, collectively referred to by economists as "Trade Cycle" movements. A simple arithmetical relation is assumed to exist between the outputs of the factors of production throughout the whole duration of the process of economic evolution. There is no appreciation that periods of "Trade Cycle" fluctuation may represent *discontinuous* changes in the structure of the economic system setting free new waves of multiplicative growth; that, as in the case of the formation of a new compound in chemistry, a recombination of the same units in a new way can produce a *qualitative* change in behaviour. In effect, that something can appear apparently out of nothing, so twice two no longer make four, but six, eight, or more.

¹ Incidentally, it is the circumstance that the major waves of investment in the past have been the result of the exploitation of some new combination of this kind, leading to a fresh outburst of "multiplicative" growth, that is the real distinguishing feature between them and the various projects for large-scale investment in Public Works (i.e. forms of "additive" growth) which are being so widely advertised to-day as a cure for unemployment and the Trade Cycle; not simply that, under conditions of approximately "full" employment, the latter must be far more costly because the circumstances of the case must render really competitive tendering impracticable, and for other reasons. (Cf. Chapter XVI.)

The best-known example of discontinuous growth of this type in the sphere of economic output is provided by harvest fluctuations. It is possible for a given agricultural area to be planted in exactly the same way in one year as in another, and to receive exactly the same quantity of sunshine and the same quantity of rainfall, manuring and cultivation, and yet in one year to yield a bumper harvest and in the next to prove a failure. The result will depend on the *order* in which the component factors have been arranged and on their *timing*. If, for example, the sun precedes the rain, the manuring is done at the wrong moment, or the cultivation is ill-timed, there will almost certainly be a failure; on the other hand, if these events occur in the right order and are properly timed there will be a bumper crop. The *quantitative* relations of the factors will be relatively unimportant. Thus, the *same* economic factors arranged in a different way give a *qualitatively* different result. A change in the basic plan of a country's agricultural system, such as occurred in the eighteenth century when the four-course rotation was substituted for the mediaeval open-field system of farming, produces a larger-scale discontinuous change in output of the same kind, though it will take much longer than a single harvest to reach full bearing. Equally, the addition or elimination of minute quantities of apparently quite unimportant elements may have a startling effect on output, as the action of plant fertilisers bears witness. Similarly, a small alteration in practice, such as a failure to apply insecticides or fungicides at the right moment, may lead to the ruin of the crop. The rule in agriculture is that "the substance which is present in a minimum quantity in relation to the need of the plants determines the amount of the crop." A similar rule operates in industry.

Industrial examples of this type of discontinuous growth are plentiful. New departures, such as the steam engine and the railway, for example, were in their day responsible for starting fresh waves of multiplicative growth of this kind in industrial output. The steam engine was, in essence, a new combination of iron, water, coal, and human labour, which made possible a "large-scale" discontinuous drop in the cost of producing goods. The railway and steamship had a similar effect in their day by causing a sudden decrease in costs of transport. Similarly, the first eighteenth-century factories were, in effect, newer—and more efficient—productive arrangements than the

older units of handicraft labour and capital that they replaced. Equally, the absence in an existing economic arrangement of a relatively unimportant invention—as measured by, say, its cost of installation or the quantity of materials used in its production—can hold up progress for a long time, as is demonstrated by the powerlessness even of the steamship and railway to make available for European consumption, until cold storage had been invented, the vast potentialities of the Argentine for producing cheap meat.¹

Each of the above rearrangements and inventions released a discontinuous wave of additional output, which bore no direct relation to the amount of labour and capital employed—or, as will be noted later, to the rate-of-growth of consumption. In all these cases, there was no simple arithmetical relation between the cost and output of the factors employed before and after the rearrangement.² These discontinuous waves of output were responsible for the discontinuous waves of profit earned and, accordingly, of savings and investment also. Naturally, it took time for the system as a whole to adjust itself in turn to each of these discontinuous outbursts of fresh growth. The falls in prices and the rate of interest, together with the lag of investment behind saving which succeeded them, were part of the process of readjustment, not, as is assumed by traditionalists, avoidable accidents.

In all cases of new departures of this kind, the forces of growth,

¹ Similarly, too sudden an advance may be disadvantageous. In the evolution of the motor-car the substitution of four for one or two cylinders was a great improvement, but not until the majority of cars had become four-cylindrical did the advantage of even more cylinders make sufficient appeal to give six- or eight-cylindrical engines any considerable superiority on the market. Similarly, a marked improvement in one part of an economic system or machine may bring no advantage in the absence of corresponding improvements in correlated elements or parts.

² The importance of the issue which this raises will be clear when it is remembered that many important propositions in current economics rely on the assumption that such arithmetical relations do exist. For example, Mr. R. F. Harrod, in the preface to his book on Trade Cycles, wrote: "There is a well-established relation, vouched for by experience and the *laws of arithmetic*, between the demand for consumable goods and the demand for durable goods." Referring later to this relation he asserts (p. 55): "Thus if consumption were advancing at the rate of 2 per cent per annum, only half as much net investment would be necessary as would be required to sustain an advance of 4 per cent." I deny that this would necessarily be the case.

previously held in check, are released; the system acquires a new lease of life. As we shall see later, the figures for population movements provide one of the clearest pictures of these waves: they show first a stream of emigrants leaving the old structure in order to prepare the new, and then later a second outflow to fill and extend that new structure.

At such times of discontinuous change, it is important to distinguish between the change in the *structure* of the productive system itself and the wave of additional *output* which results from that structural change. Both movements will have only a limited duration, but the factors which will influence and determine that duration will not be the same in both cases.

For example, in the case of such a structural change as the construction of a railway system, there will be a boom in railway materials, a rise in prices and a migration of people to open up the new centres now brought within their reach. If the economic system is a primitive one, the building of railways will involve an entire reorganisation of important sections of the constructional industries and of their labour force; new industries will have to be developed, old ones expanded and still others eliminated altogether as obsolete. Time will have to elapse before the production of new materials is able to reach its peak output. It is this time factor, as we have learned to our cost in the present war, which prevents a wave of new growth in an economic system ever being a smooth process. It must, like a wave of population growth, take the form of an oblique S-curve. The time taken by the wave to reach its crest may sometimes be foreshortened, but, like the time taken to make additions to a population, it cannot be eliminated altogether. Despite three centuries of phenomenal scientific discovery in the field of biology, it still takes nine months on an average to bring a new child into the world! The wave of output of railway materials will, in due course, reach a peak speed, after which the rate of flow will slow down as the demands for railway equipment become increasingly met. Once the country's railway system has been completed or has approached sufficiently near completion to come into operation, a wave of expansion of an entirely different kind will be needed: an expansion of the population, cities and output of the new centres opened up by the railway—that is, an expansion, amongst other things, of consumption goods of various

kinds, the wider interchange of which is facilitated by the enlargement of the market that will follow the introduction of a cheaper form of transport, the railway. The conditions favouring expansion in this case will be falling prices and not, as in the case of railway building, rising prices. For falling prices provide the environment most favourable to the promotion of a wave of progressively expanding sales to the general body of consumers. These two types of wave will often be separated by a slump. This slump will be caused by the ending of the wave of railway building and the necessity of disbanding to a greater or lesser degree the labour, plant and materials for railway construction, and of reorganising such elements as are adaptable to promote the wave of general output. This wave will also lead to fresh construction, but it will be fresh construction of a different *kind*. Unlike that in the railway building phase just mentioned, the new construction will be in towns, public utilities and factories designed to enlarge the scale of output of consumption goods. This wave of growth will also take time to reach its crest, for time will be needed to educate new consumers both for existing goods as well as for still newer types, for which purchasing power will now be available owing to the cheapening of prices which will follow the enlargement of the scale of production.¹ Often, as with the sale of frozen meat from the Argentine, it may need years of propaganda and advertising to get consumption of a new product going on a substantial scale.

What is true of an economic system is true of a single industry. A typical life-history of a new industry may be summarised as follows:

A new invention is made, which results in the provision more cheaply of some product for which an expanding market can in due time be made available. A new stream of growth in output is accordingly released. The *individual* firm, which is the earliest in the field, will flourish and make money. But it cannot count on maintaining its exclusive position. In due course, the invention will spread *throughout the industry*. Under a system of open competition, output will be increased and prices will fall until the profit per article falls to

¹ To clarify the difference between this form of approach to problems of trade growth and what are known as the "Trade Cycle" phenomena in orthodox economic circles, a note entitled "Waves of Growth and the Trade Cycle" has been included as an Appendix.

the level current in established industries. So long as sales can be increased in a proportion greater than that of the fall in price, the aggregate profits of producers as a group will expand. But for every article a point will eventually be reached beyond which sales will fail to expand further in proportion. The industry regarded as a "whole" will find itself threatened with loss. As this point is approached, certain firms, in order to resist the check to growth of output, will amalgamate in order to cheapen production still further by enlarging the size of unit employed. This closer grouping will enable the amalgamated firms to maintain for a time their position at the expense of their fellows, by producing more cheaply than they do. Ultimately, however, the bulk of producers will find themselves compelled to associate together to resist further price-cutting by agreeing to restrict output and maintain prices in the industry as a whole. People usually associate the monopoly movement with a selfish desire to increase profit, but, generally, it has been impelled even more by a desire to avoid losses. New entrants, also, will have to be controlled, as also will the introduction of still newer inventions. Growth will then stop and the industry will either stagnate or start to decline until there is a fresh "large-scale" change—if this be possible. The advent of this condition, it should be clearly understood, cannot be evaded by a general expansion of demand in terms of money, i.e. by money inflation. Even such a pronounced adherent of the modern economic view that money is the philosopher's stone as Mr. R. G. Hawtrey is compelled to admit that, while there may be cases in which the stage of elastic demand is extended, there will be others in which the stage of inelastic demand is actually hastened. "The idea that, even if all restrictive practices are discarded, an indefinite amount of inflation can be met by an indefinite expansion of output is a fallacy."¹

Long-period changes similar to those in the field of production will occur on the consumption side also, i.e. in the environment. Growth in consumption is nowadays set in train mainly in four ways. The first is by an increase in the actual number of consumers, such as will occur when a new wave of population growth is under way. The second is by producers inventing ways of producing goods more cheaply and, thereby, enabling *existing* consumers' money incomes,

¹ *Capital and Employment*, p. 309.

to buy additional goods. This may be described as "packing" more goods into existing incomes. A third is to group consumers together, so that they may enjoy, jointly, goods and amenities which would be beyond their means if each consumer had to buy his requirements separately. This last covers mainly expensive articles and amenities, the unit cost of which is high in relation to the average level of income. People unable to afford their own private motor-cars, their own up-to-date private houses, or their own private gardens, will, in order to enjoy the benefit of these amenities, submit to being "packed" with others in the same condition in motor-buses, blocks of centrally-heated communal flats and communal recreation grounds and clubs. A fourth method is to assist consumers to purchase beyond their current means by providing them with ways of anticipating part of their *future* incomes by hire-purchase credit facilities. It is important to realise, however, that, from the long-term point of view, the claims of hire-purchase to increase the aggregate of consumption are largely spurious. The increase in to-day's purchasing power is achieved largely at the expense of curtailing that of to-morrow, savings are spent *before* they are made, there is no net addition to spending over a period of years.

The history of the development of consumption—that is, the "environment"—for a new product like the private motor-car may be summarised as follows:—

In the early stages of the new commodity's development, growth will proceed slowly, being confined to those in the higher income categories. As the price of cars falls, purchasing will spread to the middle income group. The next stage will be the provision of hire-purchase facilities to incorporate still lower income categories, by enabling prospective future customers to anticipate their future incomes and savings. *Pari passu* with the above, there will be a development of what may be termed "group" consumption in the form of motor-buses, motor coaches, and taxis. As in the case of production, however, the time will ultimately come when the rate-of-growth of consumption will slow down and, finally, cease to grow altogether: new demand will then be confined to replacement.

It must not be overlooked that, as in the case of population growth, the "congestion" influences which will bring growth in consumption to a standstill will not all be direct. For example, some time

before motor sales begin to slow down, owing to a shortage of fresh customers, other factors may have intervened to make motoring less attractive. Just as population growth is not simply a matter of maintaining food supply, so growth of motor sales will not be only a question of maintaining consumers' purchasing power. Growth of motor sales will also depend, amongst other things, on the provision of space and facilities for the enjoyment of motoring. New roads must be built, old ones brought up to date; road-houses, garages, petrol filling-stations, and parking facilities must be made available. Long before consumption, as judged by consumers' buying power, begins to flag, road congestion, increased taxation or a rise in the cost of running a car may have started a slackening in sales.

Now, the rate at which consumption is made to grow by the above means will not be the same as that at which it will be convenient for production to grow, being determined by an entirely different set of factors, conforming to entirely different time scales. There will, accordingly, tend to be a perpetual lack of balance between the two. Just as there is a limit to the rate at which a population can absorb the *food* provided by its environment, so there is a limit to the rate at which consumers can absorb the *output of production* in an ordinary industry.

In the absence of the opening up of an entirely new field of consumption, which can be promptly exploited to fill the gap left by the decline in the rate-of-growth of existing sales, a slump is inevitable. Motor-car manufacturers will find themselves left with plants consisting of long chains of processes and assembly lines geared to deliver a flow of output at a rate possibly twice as fast as that at which it can be absorbed. Such plants will be completely uneconomic unless run somewhere near that rate. Since it is not possible to reconvert a mass-production plant back to an ordinary factory plant, the only alternative will be to close down a large section of the assembly chain. This must involve transmitting the wave of deceleration to other parts of the industrial field. If the spread of the wave has been at all extensive, the slump will become general. The basic cause of the slump, it will be observed, is inability to check the flow of output without causing breakdown.

The position which will supervene during the slump will be similar to that in the case of a bumper harvest, when more wheat is

produced than that for which outlets have been prepared. But unlike surplus food production, the surplus output in an industry does not—except to a limited degree—actually appear on the market. It takes the form of unused capacity and unemployed resources and personnel. The position will take considerably longer to right itself than in agriculture since, unlike farming, motor manufacturing is a highly specialised occupation and cannot easily switch to another “crop.”

If other conditions in the system remain normal, motor-car production will not revive until, with the slow passage of years, a sufficient “population” of fresh consumers—either for new cars or replacements—has accumulated to start a new cycle. It will be the story of the cod and the shark all over again. To suggest, as is so popular among theoretical economists to-day, that the difficulty can be got over by providing alternative avenues of investment for savings is entirely to misunderstand the situation. The savings that are being wasted are in the form of motor-car capacity, material and personnel, and it is quite impracticable to convert them to other purposes *at short notice*, if at all.

That the above is no mere theoretical hypothesis is convincingly shown by such limited statistical material as is available. The most complete inquiry is probably that made by Dr. Arthur F. Burns, for the United States, covering the period 1870 to the present day.¹

Dr. Burns used the physical output of commodities and services, as shown by the Annual Statistics of the United States. One hundred and four series were employed: 20 for agriculture, 3 for fisheries, 22 for mining, 45 for manufacturing, 2 for construction, 7 for transportation and 5 for trade (but there is a certain amount of duplication). It is estimated that, in the year 1925, the series covered just over 40 per cent of the commodity-producing industries. Of the 104 continuous series analysed, 92 show retardation; of the 43 supplementary discontinuous series, 38 show retardation. In most cases, the rates of retardation are appreciable. The exceptions are mostly industries of secondary importance. As a rule, the industries which have grown most rapidly show the most rapid rates of retardation, and the industries which have grown least rapidly the lowest rates

† ¹ “Production Trends in the United States since 1870.” See also my paper, *Journal of Royal Stat. Soc.*, Vol. CI, Part III. 1938.

of retardation. Elsewhere, I have collected together such meagre statistical material as exists for this country and it reveals the same trends.¹

Is it possible to provide similar information on national production taken as a whole? The answer is that statistical data suitable for direct measurement do not exist. We cannot assume, without corroborative evidence, that decline in the rate-of-growth of *individual* industries implies a decline in the rate-of-growth in the *aggregate* of production of an economic system as a whole. Theoretically, a decline in the growth of individual industries could be quite consistent with expanding growth in the aggregate. Indeed, the more vigorous and progressive the system, the more marked might this divergence in trend become. From the practical point of view, however, it seems obvious that what is true of an individual industry must in the end be true of the whole system also.

In the process of growing, the pattern of an economic system will increase in complexity as well as in size. Its shape will be a compound of the struggle between, on the one hand, competing elements within the system itself and, on the other, the system as a whole and its external environment. As in the case of populations under natural conditions, it will be extremely difficult to disentangle, from the fluctuating complex of growing industries, the curve of growth, or the life-history of any one particular industry or group of industries. And one must not expect to find that, under the vicissitudes of an actual developing economic system, an individual industry will be able to conform strictly to any theoretical curve of growth. It can approximate to it and no more; for, once the forces making for the advance of a particular industry cease to gain relative strength over those opposing growth, the latter will tend to surpass them. The position will be complicated by short-term fluctuations, as well as by the more or less continuous addition of new commodities that will occur in a growing system. These commodities, in many cases, will themselves restrict the increase in demand for old commodities. The faster the industries producing the new commodities expand, the greater will be this restrictive influence, and the more difficult it will be for the new industries themselves to sustain their initial rates of progress. Deterioration, and the operation of the law of diminishing

¹ See my paper, *Journal of Royal Stat. Soc.*, loc. cit.

returns in the case of natural resources, will be other potent factors making for deceleration. Retardation, also, will occur, partly because the new industries compete directly with the older industries and partly as a result of their attracting to themselves the nourishment, i.e. capital, labour and materials, which might otherwise have gone to sustain the older industries' growth.

Inventions making for cheaper production, on the other hand, may for a time partly offset this retardation. But there will be a limit to the effectiveness of invention. Since Watt and Smeaton reduced the coal consumption of steam engines from 30 lbs. per horse-power to 9 lbs., no genius has found a way of making a further reduction of 21 lbs! No matter how spectacular future improvements in transport may be from the engineering point of view, they cannot possibly reduce costs to the same absolute extent as the steamboat and the railway did originally. Professor Kuznets,¹ in his survey of the technological histories of the cotton, woollen and worsted, iron and steel, boot and shoe, paper and copper industries, found that the rate of technical progress in each of these, except copper, had been slackening, and it is doubtful whether copper is still an exception.

Several attempts have been made to compile indices to represent changes in the rate-of-growth of total output of an industrial system, especially in the U.S.A. All of them are of very doubtful value. We possess little or no information in regard to the "birth-rates" of new industries and the "death-rates" of old. The average life-span of industries is, probably, becoming shorter. A growing proportion of production is taking the form of tertiary products, luxuries and superfluities, the demand for which has not the same stability or magnitude as the demand for staples. We shall be erring on the right side, if we assume that all these indices understate the rate-of-growth in production. At the same time, it must not be forgotten that, accustomed as we have been to living in a progressive world, any suggestion that the growth of production, as a whole, is tending to decline will meet with strong psychological resistance. One has the feeling, for example, that Dr. Burns, whose figures were quoted just now, has been influenced by this psychology. For, despite the extent and spread of the retardation shown by his investigations, he feels it necessary to record his belief in the persistence of progress by

¹ *Secular Movements in Production and Prices.*

concluding his analysis in the following terms:—"If there has been any decline in the rate of growth in the total physical production of this country (i.e. the U.S.A.) its extent has probably been slight and it is even mildly probable that the rate-of-growth may have been increasing somewhat." No factual evidence in support of this conclusion, however, is provided in his book.¹ The chart below, on

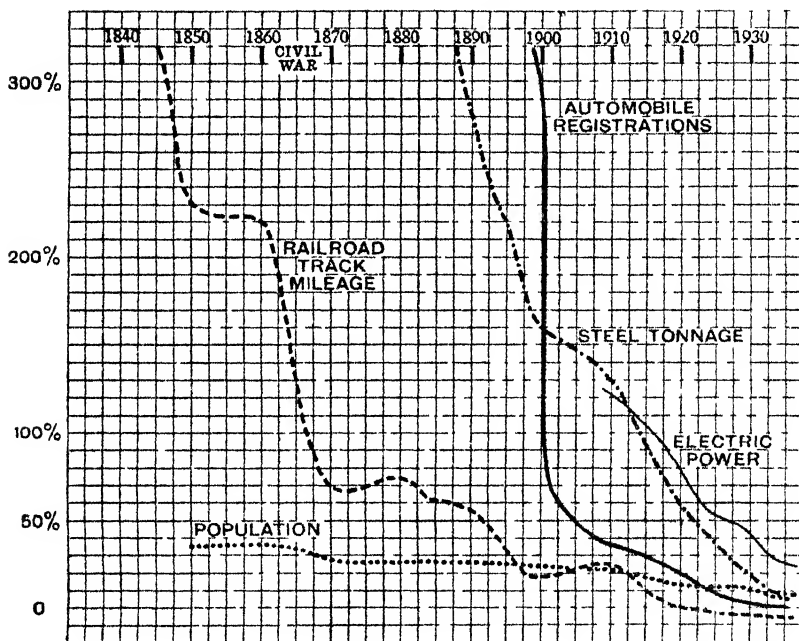


FIG. 5.

The decline in growth-rate of five important items in American economic life.

which are plotted the *rates-of-growth* per decade of certain outstanding features of the economic system of the U.S.A., scarcely supports Dr. Burns' conclusion.

So far as the Western World in general and the United Kingdom in particular are concerned, any conclusions based on direct industrial evidence must be even vaguer, since our data are even more limited. There are, however, a number of indirect pointers.

¹ It is only fair to add that Dr. Burns' conclusions were published before the full effects of the 1929-31 slump on America's national economy were experienced.

The well-known diagrams of the world production of minerals and metals since 1860, prepared before the war by Högbom for the League of Nations, strongly support the view that the phenomena we are discussing have been world-wide in scope. (See Frontispiece.) The curves indicate that until about 1912 production in each case was rising steadily, with a few irregularities, following roughly a compound interest law. But after about that date the general rise ended and there began that series of violent oscillations that have characterised consumption during the past 25 years. As the theory in this book would lead one to expect, the end of that steady rise coincided with the closing of the age of territorial expansion and rapidly increasing population. The history of coal, the fountain-spring of modern industrial development, epitomises the world trend.

From the close of the fifteenth century, when the exploitation on an appreciable scale of the coal mines round Liège first started, up to the outbreak of the first World War in 1914, the world output of coal continued to increase rapidly and almost uninterruptedly, decade by decade. In the course of this four hundred and fifty years of rapid growth, world output was multiplied some two or three thousand-fold. The discovery in the eighteenth century of methods of producing, first, pig iron from ore, and, later, bar iron, using coal and coke as fuel, made it possible eventually to turn out iron at something like a fifteenth of the cost that had prevailed at the richest period of Greco-Roman civilisation. Construction on a grand scale, with iron and steel, became possible for the first time in history. The application of steam power to manufacturing was followed by its application to transportation. Coal, perhaps, affords the best index of the general slowing down in the rate-of-growth of man-made industrial systems that has been under way in recent decades, for the growth among the Western peoples in the manufacture of cheap commodities has coincided roughly with the growth in the output of coal. The wave of rapid increase based on coal seems now to have passed its peak. During the two decades, 1914-1933, there was no increase in the world production of coal itself; indeed, in the United States, the leading industrial country of the world, output actually registered a decrease. This stagnation appears too sudden to be accounted for solely by the substitution of other fuels, such as oil and hydro-

electric power, for coal.¹ Besides, it has been associated with a slackening in the rate-of-growth of the market for industrial products generally. In Great Britain industrial output, which is estimated to have increased by more than fourteen times from 1800 to 1901—a period during which the population increased just over threefold—has, since 1901, hardly kept pace with the growth of population.²

In the United States, while the per capita output of manufactures went on increasing until 1929, nevertheless, recent investigations show that the rate-of-growth of the physical volume of output of manufacturing industries was slower from 1916 to 1929 than from 1899 to 1916. From 1929 up to 1938, the year before the second World War broke out, there was no appreciable increase in the volume of output, although the population grew. Thus, in spite of the efforts made during the last decade to increase the purchasing power of the poorer classes, and thus raise the standard of consumption, a very long period of phenomenal increase in industrial output seems to have come, temporarily at least, to an end. Another indication of a change in the same direction is that, since 1900, there has been a noticeable tendency in the leading industrial countries—the United States, Great Britain, Germany and France—for the rate-of-growth of real income per person gainfully employed to diminish. In all these countries the rate-of-growth per decade was markedly slower from 1900 to 1940 than it was from 1850 to 1900. Even in Japan, which showed an exceedingly rapid upward trend from 1900 to 1930, there have been, since 1930, “unmistakable signs of slowing down.”³

The cycle of growth of a man-made economic system of the modern industrial type may thus be summarised: Output, like the population for whose needs it is intended to cater, once it gets under way will start to grow by geometric progression. After a time, however, this multiplicative growth will begin to meet with resistance. Goods will tend to be produced at a faster rate than they can be absorbed at existing prices. In an endeavour to maintain the earlier

¹ J. U. Nef. See *Rise of the British Coal Industry*.

² Walter Hoffmann. *Ein Index der industriellen Produktion für Grossbritannien*. *Weltwirtschaftliches Archiv*, XL. (ii, 1934.)

³ G. T. Jones, *Increasing Returns*, p. 248. Colin Clark, *The Conditions of Economic Progress*, pp. 147-159.

speed of absorption, producers will feel impelled to organise into larger units to reduce costs by eliminating labour and short-circuiting intermediate processes. This means that a certain number of would-be consumers will be thrown out of the system (i.e. those rendered unemployed by this elimination), for not all of them will be able to secure employment immediately elsewhere. In an endeavour to offset this deceleration by speeding up consumption, selling campaigns will be organised and consumers encouraged to consume more rapidly, by advertisement, the provision of consumer's credit and other similar measures. In time the additional expenditure which these stimuli will entail will begin to increase costs of distribution disproportionately; these additional costs, as they mount up, will, in time, begin to offset such reductions in costs as are still possible on the production side. To devise cheaper methods of distribution will not assist for long as, after a certain stage, this will necessitate throwing workers out of employment in distribution also more rapidly than they can be reabsorbed—i.e. a fresh cutting-down of the number of would-be consumers. To escape from this vicious circle it would be necessary to provide new avenues of *complementary* employment for those displaced at a speed *as fast as* that of their displacement. In the early days of the system, this will be readily achieved. But in time a limit will be reached. The human need for variety is not insatiable. Besides, meanwhile, the standards of remuneration and living of the poorer sections of the community will have been progressively rising, partly at the expense of the rich. This will have the effect of checking the exploitation of new luxuries and the invention of types for which, in wealthier times, a market could have been developed in the first instance among the rich.

The last stage in this strange, eventful history will be that producers will begin to resist attempts to force them to produce faster and consumers will similarly resist attempts to force them to consume faster. Both will prefer an increase in leisure to an increase in material goods. That the exercise of leisure does, in fact, create a measure of additional production and consumption is beside the point. It is outside the purpose for which the pattern of the economic system was devised. It cannot prevent, but may accelerate, the system's breakdown. Besides there is a limit to the amount of leisure that people are prepared to put up with!

As in the case of the long-period changes in evolution in a single industry, money inflation is more likely to hasten than to slow down the advent of this condition.

Bearing the above principles of growth and form in mind, let us pass under review some of the leading types of economic system built by man over the course of human history.

CHAPTER V

PATTERNS FOR LIVING TOGETHER

Society has been defined as man's reaction to the increased density of population first made possible by the domestication of plants and animals. Such domestication enabled the population density on a given area of land to increase many hundred-fold. This quantitative change also brought about a qualitative change in human relations, by making an organisation beyond the family or small tribe of families a necessity.

A normal society of hunters would have no need for a complex code or organisation, except during periods when they had to co-operate for some purpose such as the rationing of water supplies. An arable agricultural community, on the other hand, cannot avoid a fairly high level of co-operation once its population has attained a certain density. A modern industrial system, dependent on the use of highly complicated machines, requires an even greater degree of co-operation—a far more subdivided and specialised form of grouping than is needed in a society based on agriculture and handicraft. It also makes a far higher density of population practicable.

But whatever social system of production is adopted, it will always be true that there will be a most convenient size of population; namely a population for a given area that will be better off than a larger or smaller one would be. The exact size will, of course, depend on the standard of welfare adopted. Thus, a denser population might have a higher average income but be more congested and so afford fewer opportunities for the enjoyment of that income and greatly reduce mobility and personal freedom. If growth continues beyond the optimum point, then it will be only a matter of time before the system will either disintegrate or be forced to devise some new method of grouping capable of accommodating the larger numbers. It is for this reason that progress normally comes only through conflict. "There must be a rebellion against existing conditions, a perpetual breaking down and a perpetual rebuilding." It will be noted that this view does not deny the existence of individual freedom or assert that man is a slave to his economic system, but it does state that the occasion and manner in which he will, in fact, exercise that

freedom will be largely determined by the density and position on its curve of growth of the economic group to which he belongs.

Throughout history, men have rebelled against the results of excessive economic growth and the rigid economic systems for which that excessive growth has been responsible. They have seldom remained for long their slaves. All the same, the form of the economic system has determined the nature of the struggle. Freedom has been defined as the recognition of necessity and it has been said that whenever we recognise necessity we become more free. From this point of view individual freedom is seen not as something necessarily opposed to group control but as something which finds its highest and most fruitful expression by submitting to and becoming part of that group control. It is only when the group as a whole has reached a critical size that any serious incompatibility emerges between the two.

The idea that for every economic system there will be a most convenient size and that growth beyond that point will lead to disaster is not a new one. The notion of a convenient size was well known to the ancient Greeks. No one supposed that the size of a Greek State was a mere accident in its constitution, or that it might have been indefinitely enlarged and yet have retained its essential character. On the contrary, limitation of size belonged to its very notion. The greatest State, wrote Aristotle, is not the one of which the population is most numerous; on the contrary, after a certain limit of increase has been passed the State ceases to be a State at all. "Ten men are too few for a city; a hundred thousand too many." "Not only London," observed Lowes Dickinson, "but every one of our large towns would have been too big for the Greek idea of a State."¹

The view that there is an optimum population for any given set of

¹ How closely "in little" the economic problems of the City States of his day paralleled those of our own time is shown not only in Plato's *Republic* but also in his *Laws*, where he attempts to make his ideal system practical. Both he and Aristotle sought to limit the number of citizens in their ideal State, to escape from the dangers of over-population of which, unlike the peoples of our own day, they were only too well aware. Plato, in particular, appreciated that a satisfactory economic system could only be achieved by combining with the limitation of the number of citizens the elimination of both the plutocrat and the beggar. His solution for the latter problem in the *Laws* (745 c) was that every citizen should have an allotment of land which should be inalienable, and that excessive wealth should be curbed by a kind of supertax amounting to confiscation above a certain figure—a striking resemblance to current proposals in Germany and other parts of Europe before the present war.

economic circumstances and that growth beyond the optimum or decline below it produces conflict and necessitates alteration in the economic pattern of society is of such importance to a proper understanding of past and current events and of probable future trends, and appears to be so little appreciated, that it would seem worth while to illustrate it not only by a number of examples taken from our own time but also by a brief reference to conditions in the Ancient World when the affairs of men were less complicated and the basic issues therefore more clearly appreciated.

The history of the City States of Ancient Greece during the four centuries falling approximately between 725 and 325 B.C. and of the development and decline of the Roman Empire affords a number of striking illustrations. The means of subsistence of the Hellenic peoples at that time were obtained almost entirely by raising a varied agricultural produce in their home territories for home consumption. When the crisis between the population and environment was reached, different States contended with it in different ways. Some, like Corinth and Chalcis, disposed of their surplus population by seizing and colonising agricultural territories overseas—in Sicily, Southern Italy, Thrace, and elsewhere—where the native population was either too sparse or too incompetent to resist invasion. Thus, pressure of population was reduced simply by extending the geographical area of the existing Hellenic “economic” pattern without altering its character.

Sparta, on the other hand, satisfied the land-hunger of her citizens by conquering her nearest Greek neighbours in Messene.

Athens reacted to the population problem in a different way again. At first she neglected it—neither planting colonies overseas nor conquering the territory of her Greek neighbours—until the pressure threatened to find vent in revolution. At that point, when the solutions sought by other States were no longer open to her, there appeared Solon, one of the greatest economic thinkers of antiquity, to provide her with an original solution of her own. What did Solon do? First, he gave the farmers of Attica new hope by shaking off their burden of debt and removing the fear that their wives and children might be sold into slavery to redeem it; second, he started an entirely new type of economic pattern involving a change-over from “subsistence” farming to “cash-crop” farming coupled with the

complementary development of industry and commerce. He forbade his Attic farmers to export wheat outside Attica, but he balanced this by providing them with a growing home market by encouraging men with trades to settle in Athens. As Britain was to do some two thousand years later, at the time of the revocation of the Edict of Nantes, Solon opened the doors wide to "men of trades": men of enterprise and skill, who imported not only their trades and crafts but a great tradition to help to mould the national character; men who wanted a peaceful life, to be rid of stress, to be given security and opportunity. But he went even further. Attica was not a good wheat country, but South Russia (as we now call it) was, and needed to import all her olive oil, primarily a basic food product but also the equivalent of our modern soap and electric light. Attica was well suited to produce olive oil. If the Attic farmer could be made to shift from wheat to olive growing, then, once the trees were mature, there would be work and profit on the land in abundance. This cannot have been an easy transformation to effect if, as we are told, it be true that an olive tree takes eighteen years to reach full bearing. It involved extensive political reorganisation; rights in private property had first to be established and secured before individuals could be induced to risk investing capital in the future in this way. This shift from grain to trees later extended to the vine, another branch of agriculture which requires security and continuity of tenure for its establishment. The new system of agriculture gave the small farmers hope, security, and new ideas and started a new wave of growth. Unfortunately, (bearing out the argument of this book), the population increased and with it the demand for food and the value of the land, until the point of overcropping was reached. Soil exhaustion and erosion followed. But this did not happen immediately. Meantime, when the successfully organised resistance of the Syrians and barbarians deprived the other Hellenic States of the means of dealing, by geographical expansion, with a growing population without departing from the old-fashioned system of subsistence farming, they copied her example. Thus, says Arnold Toynbee, Athenian statesmen, with Solon as their leader, not only averted a revolution in their own State, but, by "discovering this solution for the common problem as far as it affected themselves, they incidentally opened up a new avenue of advance for the whole of the Hellenic world."

But, in the long run, this solution also proved only temporary, because even this new form of economic "heap" was destined, in due course, to fail to maintain stability; it grew beyond its most convenient size; Hellenic society then became afflicted with the twin calamities of inter-State war and inter-class war which killed off the best people.

In theory, a solution might have been found by a voluntary agreement between the constituent States to give up their State sovereignties, or the same result secured by a revolution which would have brought the whole of the existing State framework to the ground, when a single universal State might have been constructed under a common roof. But it is to be doubted whether this super-national authority could have succeeded in practice, for it would still have been faced with the problem of controlling, on the one hand, the internal growth of the system itself, including its population, and, on the other, of maintaining equilibrium between it as a whole and the areas and peoples outside it. Rome for a time succeeded, some centuries later, in establishing a Hellenic world order almost on this basis through an association of City States maintained by the forcible domination of one State over the rest. This system also broke down in due course. That this breakdown was not caused simply by human folly and selfishness but by inherent structural weaknesses in the system itself, which were bound to show themselves once it had exceeded a certain size, seems clear from the following facts.

Many accounts have been given of the closing phases of the Roman Empire, and, though discussion still proceeds amongst those who seek for a *single* cause to account for that breakdown, there is general agreement regarding its main features. So long as the Empire expanded, industry could steadily enlarge and extend its field of custom by taking advantage of the buying-capacity of newly-acquired lands. Prosperity spread throughout the Empire, accompanied by widespread decentralisation and a more equitable distribution; the middle class, under direct encouragement of the Emperor, shared to a considerable extent in the wealth of the Empire as a whole. "When, however, the limits of Empire were reached, and the external market in consequence grew weaker, industry could only continue to grow if it was able to find means of exploiting the internal market more actively. This would have meant extending its scope to

include the lower classes. But this was impossible without a modification in the social structure of the Empire."¹

Not only so, but with the limited technical knowledge of the times—the absence of coal—and under the political conditions then existing, anything corresponding to the “large-scale” manufacture and “mass production” of cheap goods of the present day was impracticable. The increase in economic activity that occurred was “a matter of greater extension not of greater depth.” The level of organisation reached in the Hellenic age was not surpassed. There was merely an expansion of the existing system to embrace new territories. “The step from the manufactory to the factory and the machine as the fundamental means of production was still not made.”

“Large-scale” enterprise, accordingly, meant mainly an increase in size without a fundamental alteration in form of the constituent units or—beyond a very limited degree—reorganisation of method. It never even succeeded in exterminating or markedly limiting handicraft, least of all in the West. Since the purchasing power of the lower classes could not grow, the circle of buyers for articles of superior quality was made up almost entirely of the upper and middle classes. When their number ceased to expand and began to decline, the prosperity of industry declined with it. Industry relapsed into small-scale production. Quality declined with quantity; production became less intense.

By the time this stage was reached, large cracks had already appeared in the central framework of the system as a whole, owing to the disrupting strain of over-decentralisation. Decentralisation meant that in time the centre began to decline in significance, that the peripheral regions became more self-dependent, and that their independent economic activity increased. Costs and risks combined to bring about the transference of production to the regions of consumption—a phenomenon not peculiar to the ancient world. “The result was, in the last resort, that regions, which had relied substantially on primary production and had imported manufactured articles processed by skilled technique, now themselves worked up and finished the raw materials, thus developing special capabilities of their own, until in the end they imported raw materials from abroad to be processed at home.”

¹ *Camb. Anc. Hist.*, Vol. XII., p. 252.

Italy, originally the chief productive centre, lost her dominating economic position and began to suffer from chronic trade depression. Depopulation, accompanied by an outflow of population from the centre into the provinces where prospects were better, made matters worse. Large enterprise gave way to small concerns of the artisan type, and the old flourishing export of industrial and agricultural products fell away. Parallel developments occurred on the land. The first stage of the closing phase in agriculture was a more intensive cultivation owing to a relative shortage of cultivable land. The land was, thereby, exhausted by over-cultivation. To this was added trouble due to lack of labour. Then came the gradual abandonment of the land by the small farmers of Greece and Rome because of its impoverishment. Next came a reversion to a less intensive type of cultivation by the landed proprietors of the Roman Empire, who tried to exploit estates on a large scale, using unpaid slaves. Professor Rostovtzeff has recorded how the arable and forest land of province after province became converted into vast olive orchards and vineyards, known as Villas, to provide profits for large landlords, the great majority of whom lived in the towns, until the point was reached when both olive oil and wine became such a drug on the market that sometimes buyers could not be found for them at any price. On the industrial side, the collapse of the Villa economy on the land was paralleled by the progressive destruction of private incentive and enterprise by the steadily increasing burden of taxation and government interference, culminating in the nationalisation of many enterprises, especially mines and metallurgical plants. As a result of these developments the third century saw a marked shrinkage in the output of mines and factories, and the abandonment of land previously cultivated, together with a progressive increase in costs brought about by the rise in price of fuel and building materials owing to the growing scarcity of timber of all kinds caused by the excessive cutting down of the forests.

Instructive parallels to this experience will be found when we come to examine the history of our own age. This is not surprising, for, omitting a reduction of population by famine or pestilence, which, of course, occurred to some extent during the period discussed, there are three ways and three ways only by which an over-expanded economic system can obtain relief from population congestion:

breakdown, whether through internal disintegration or war with external territories, migration, or a change of economic pattern. In other words, the choice lies between the three methods selected by the City States of Ancient Greece, just quoted. The third is the method which has blazed the trail of what we, today, term economic "progress."

It would be a mistake, however, to assume that the problem is susceptible to a simple man-made solution. For still longer-term and indirect influences may be at work over which the immediate inhabitants of the territory may have little control, such as, for example, geographical and climatic changes. A striking illustration of this is the contribution made by progressive deforestation over the centuries to the collapse of the economic systems of Ancient Greece and Rome.

In early times, a large section of the land bordering on the eastern Mediterranean—Calabria, Greece, the greater part of Asia Minor—was heavily wooded. The trees of these forests acted as the regulators of the water supply. The spongy soil below the trees, rich in humus, absorbed the rain as it fell, from which it reappeared later in the springs and furnished the watercourses and rivers when the rains had passed. These forests were cut down without regard to their regeneration; not only was the maximum cut out, but there was also a desire to extend the grazing. Unfortunately, the goat has always been the chief grazing animal in these areas. Hungry goats will eat anything that grows; they destroy every seedling as fast as it gets its head up, thus completing the work begun by the woodcutters. This is not all. Their sharp hooves break the surface of the soil, and during the rains gullies form and, as more and more soil gets washed down over a period of years, the hillsides that had been forest and meadow get bared down to the hard infertile subsoil and rock. How quickly this may happen may be illustrated by a story from a book, *Rich Land, Poor Land*, describing how in our own day in Georgia a great crater 200 feet deep had arisen from a simple gully. "Do you know what started him? A trickle of water running off a farmer's barn forty years ago. Just one dam' little trickle, and now a third of the country's gone—forty thousand acres!"

Nor does the damage end there. Sir Daniel Hall, to whom I am indebted for the above information, describes the closing phase as

follows: "The rainfall running off the bared hill country without a check develops as a torrent lower down, attacking the meadows bordering its course. The earth also that has been washed off the hillsides is carried down to the plains where the rivers lose their velocity; there it is deposited and turns the river into a chain of malarious swamps, chokes its mouth and destroys any harbour that was there. Such has been the history of much of the fairest land on the seaboard of the Levant; on the heights bare rock where once forest and meadow flourished, rivers that are torrents in winter and dry in summer, old seaports no longer accessible. The destruction of the forest was thus a major factor in the decay of Greece and of Rome itself; it meant, in the first place, the loss of farming land and of the agricultural population which formed the backbone of the early armies of the republics. With the swamps came the spread of malaria, which again has been invoked as one of the great causes of the fall of ancient civilisation."¹

But it would be unjust to lay the whole blame for these misfortunes on man, for influences of a higher and more elemental order had also been operating: climatic changes in the order of nature herself, due to a contraction in size of the polar ice-caps. Be that as it may, when we examine the destinies of peoples, societies and cultures, we observe how they all pass through fairly clear-cut stages of birth, infancy, adolescence, maturity, old age, decay and death. But what has decayed and died in each case has been, not the individual, but the society—the system of organisation or "grouping." Societies experiment; societies discover new ways of living; and, even when complete breakdown has occurred, much of the knowledge acquired from their experiments and discoveries has lived on.

Likening the body of society to the body of a living organism with its own inherent life-span does not, of course, involve belief in the existence of a predetermined life-span or that there is anything predestined about its end. To stress the element of recurrence does not, any more than the scientist's search for repetitive sequences, imply just a vain "endless repetition." There is always progress towards an end—an act of creation, which makes each cycle unique. Otherwise evolution would be impossible. Nevertheless, there is a "net of necessity as well as a breath of freedom." The "net of

¹ *Nature*, 5th March, 1938. Cf. Plato, *Critias* 111.

necessity" is insisted upon here, because it is the ignoring of this that has brought disaster in the past.

The difference between the prevalent attitude towards such questions and that of the scientist—which is much the same as that of the Ancient World—was aptly stressed before the war by a speaker at a meeting of the British Association for the Advancement of Science. He said: "Human nature has a curious habit of gambling against the law of cause and effect. We always hope that the fate which befell our predecessors will pass us by. Babylon, Egypt, Rome, Spain, all traversed the same track; and to-day we follow in their footsteps, hoping to reach some different goal." He then proceeded to add something which is very pertinent to the argument of this book:

"The specific causes of the collapse of once dominant races are, doubtless, varied, but there is general agreement that one universal factor in disintegration is complexity, an aspect of over-specialisation. The units of an empire, be they individuals or factions, tend to work together in harmony during the period of upward struggle, but when a position of dominance is won, they continue to struggle. When there are no new worlds to conquer they begin to fight among themselves. Selfish aims replace patriotic ones, and the community becomes discordant. Those who deny that human institutions are subject to the laws of organic evolution know either no history or no paleontology."¹

In the next section it is proposed to pass under review some of the more notable historical experiments in constructing economic systems of increasing affluence and size out of the balanced systems of soil, plants and animals known to the Ancients. We shall commence with the small primitive forms of peasant agricultural society which succeeded the collapse of the Roman Empire in Europe, and show how, in due time, these became converted into the gigantic industrial societies of to-day.

¹ Professor H. L. Hawkins, President, Geological Section, British Association, 1936.

PART II
HISTORICAL ILLUSTRATIONS

CHAPTER VI
FLUID ECONOMIC SYSTEMS

Man's habit of organising economic systems, it may not be unreasonable to assume, started as a development at a higher "level" of that deep-seated instinct for "territory," the urge of which leads animals to subdivide the area in which they live in such a way that each individual takes unto himself a space in which he is free to satisfy his basic needs of food and shelter and where, also, he and his family can live their own lives, free from interference by their fellows. This instinct is by no means confined to the higher animals; it is particularly noticeable among birds, where it reaches a considerable degree of refinement. On the principle of the old saying "One hill cannot shelter two tigers," there is a tacit arrangement that each bird, or pair of birds, shall be permitted to "have" an area sufficiently large to supply its requirements.¹

The relevance of this instinct to the present argument is that there can be no cause for doubting that density in relation to "territory" may frequently be more important than density in relation to food supply as the operative factor in causing a slowing-up in population growth. The impression of the casual observer of nature that every niche has long ago been filled with plants, and animals dependent on plants, that the habitats are full to bursting-point with life, has been found by expert investigators to be incorrect. For example, the bird life on an acre of rich farm land with trees and hedges and grass and crops is often only a few kilograms in weight. Animal numbers seldom grow to the ultimate limit set either by the food supply or by the available space in the purely geographical sense. Charles Elton, the leading British expert in this field, has summed up the situation in the following words: "Animal life is widespread, it has, so to speak,

❖ ¹ For further details see R. Glenday, *Economic Consequences of Progress*, pp. 24-28.

staked out its numerous claims, but seldom succeeded in exploiting them to the full."

Like certain other classes of animals, man tends to organise his territory on a "group" as well as on an "individual" basis, and not unnaturally, as in the latter case also, conflicts frequently arise both between groups using territory in the same way and those using it in a different way. The time taken to adjust conflicts of this kind among human groups is usually much longer than among most other animals, owing to man's much slower rate of reproduction. How quickly adjustment can be reached among rapidly-breeding animals when occasion demands is seen when, as has occurred on the American continent even in modern times, great lakes have appeared with incredible suddenness—almost overnight—and remained permanently or for a long period of years. Douglas Gordon has reported from personal experience an example of the rapidity with which the teeming wild life of such a region can change its character. "Even as a new building estate becomes inhabited, so birds and beasts of a different order arrive to take possession of the altered amenities . . . all arriving as if by enchantment, and in less time than would be occupied in stocking an artificial reserve or Zoo." The nearest parallels on the human plane have been the economic transformations in the New World associated with the waves of migrants that left the shores of Europe in the seventeenth and nineteenth centuries respectively to settle on the American continent. Even so, the new economic systems founded by them took many decades to achieve even a temporary condition of stability. More usually, economic transformations have taken place much more slowly and have generally involved a protracted conflict between the existing occupants exploiting the territory in one way and the newcomers desiring to exploit it in another and different way.

One of the oldest conflicts of this kind still proceeding to-day is that between arable agriculturalists and keepers of cattle. Enshrined for all time in the story of Cain and Abel is the earliest known example of the unceasing struggle between the settled arable farmer and the nomad keeper of cattle. Like the cod and the shark, sometimes one group temporarily gains the upper hand and sometimes the other.

T. E. Lawrence, in his *Seven Pillars of Wisdom*, has left us a vivid

picture of this never-ending conflict as he found it as recently as 1914-18 in progress on the fringes of the desert regions of South Arabia known as the Yemen. Here population growth has been the principal motive force. He says: "The migration problem is still the greatest and most complex force in Arabia, however it may vary in the different districts." In Yemen there is no foreign trade, the towns are just market towns. The cycle is as follows: The population slowly increases; the scale of living is brought low; and a congestion of numbers is generally felt. This congestion cannot be relieved by emigration overseas; migrants cannot go northward along the hills, for these are barred by the alien belt of the Holy City of Mecca, violently hostile to the Semitic consciousness. The congestion, when it becomes extreme, finds its only relief in the East by forcing the weaker aggregations on its borders down and down the slopes of the hills to the desert valley below. Lawrence reports that, in the past whenever this happened, "these weaker clans had continually to exchange good springs and fertile palms for poorer springs and scantier palms, till at last they reached an area where a proper agricultural life became impossible." They then began to eke out a precarious husbandry by breeding sheep and camels and, in time, came to depend more and more on these herds for a living. Finally, under a last impulse from the straining populations behind them, the border people—now almost wholly pastoral—"were flung out of the furthest crazy oasis into the untrodden wilderness as nomads—even to the frontiers of Syria and Mesopotamia."

But this is only half the story. For the people of the desert were as little static as the people of the hills. They produced a return swing of the population pendulum. The desert, as a factory of nomads, became a source of migration. Its economic life was based on the supply of camels, which are best bred on the rigorous upland pastures with their strong nutritive thorns. The camel markets of Syria, Mesopotamia and Egypt determined the population which the desert could support and regulated strictly their standard of living. "So the desert likewise over-peopled itself on occasion: and then there were heavings and thrustings of the crowded tribes as they elbowed themselves by natural courses to the light." They might not go south and they could not turn west. Sometimes, if the tribes looking for new homes were strong and vigorous, they might succeed in occupying part of

the central oasis. If, however, the desert people had not this strength, they were pushed gradually north to become riverine Arabs of the Lower Euphrates, or, climbing the ladder of the Western Oases, their faces were set towards Aleppo or Assyria. Nor did the pressure cease even then; the inexorable trend northward continued. The tribes found themselves driven to the very edge of cultivation in Syria or Mesopotamia. "Opportunity and their bellies then persuaded them of the advantages of possessing goats and later of possessing sheep also; and, lastly, they began to sow, if only a little barley for their animals." They then ceased to be wandering Bedouins, and began to suffer like the villagers from the nomads behind. Insensibly they, in their turn, became peasantry.

Obviously, there will be only two ways in which this eternal struggle between the nomad and the tiller of the ground can be finally resolved: either one must absorb the territory and the system of the other, or population growth in both systems must be regulated. But population control would, of course, be an extraordinarily difficult thing to achieve in primitive fluid communities of the kind under consideration.

But increase in numbers is not the only source of conflict between different methods of using land. Competition between different and, in a sense, opposed ways of organising and living on the land are also involved. It is a common feature to find a deep-seated antagonism between the sedentary husbandman of the plains and the nomadic herdsman who passes near or over his lands. On the continent of Europe in mediaeval times, for example, the shepherds were blamed for deforestation and the ruin of husbandry, and all sorts of regulations were laid down to protect the latter. The hostility of the settled town and village dwellers often took the form of oppressive taxation and the setting up of leagues of towns to protect themselves against the effects of the regular seasonal migrations of the shepherds, who drove the great flocks from the summer pastures in the mountains to winter pasture in the plains. This common hostility led, in its turn, to the organisation of great protective associations among the cattle-owners themselves.

This practice of seasonal migration, usually known as *transhumance* on the Continent, has taken place from very early times in lands where there is a combination of low-lying plains too dry to

support the flocks and herds in summer, with high mountain pastures which are under snow in winter. In a modified degree, it has been carried on in Scotland and Wales, and even in parts of England.

The home, however, of *transhumance* was in the Mediterranean basin, the most remarkable example, according to the late Professor Eileen Power, being provided by Spain, the wool from whose huge herds of sheep was considered in mediaeval times only second to the Cotswold wool of England. Flocks, totalling between two and three million, often travelled as much as 350-450 miles from summer to winter pastures. The conflict with the farmers in this case was resolved by the famous organisation of sheep-farmers known as the Castilian *Mesta*, which completely dominated the economic organisation of Spain by the end of the Middle Ages. This ultimately proved fatal to Spanish arable agriculture. Thus we find one form of economic organisation triumphing over another, not because it was more efficient but because it was more powerful.

But the opposition between nomad and settled forms of agriculture respectively was not the only source of conflict between different economic ways of using territory even in primitive times. In course of time there emerged another source—a still higher level of organisation—albeit not so important in the Arabia of those days as it was to become later in Europe. It was constituted by the organisation of people and territory for the purpose of regional interchange; its unit of organisation was the city. This type of activity, wherever permitted, nearly always owed its origin to the same cause: the surpluses created by the natural fluctuations in crop harvests and in the populations of animals useful to man, such as tended to occur at different times in the different regions owing to the existence of marked differences in climatic and soil conditions even in regions geographically contiguous to one another. Wherever practicable in primitive regions it is likely to pay handsomely to collect these natural surpluses of useful plants and animals, and either to exchange them one for another or transport them from areas of plenty to areas of scarcity where, failing the existence of an exchangeable surplus of a commodity of another kind, they can be disposed of for treasure or some purely personal service. This procedure has also been employed to get rid of surpluses of human population! In primitive countries like Africa, the native tribal organisation has usually consisted of a ruling

class with the rest of the population slaves, or at least dependants. Another stratum of slave population may be added as a result of a successful war. Agriculture, the principal industry, is quite usually based on slavery. On slave labour the tribe supports itself, and has a small balance of material or, in default, human goods to export.¹

When commerce between regions reaches a certain size, it will pay to establish special centres for the interchange of these surpluses. Thus there arises a new form of economic organisation—the city. This is primarily a market not for manufactures but for commercial interchange, carried out by an entirely new economic class—the merchant; what the Greeks called an *emporion*, a centre where merchants gather—a centre of distribution we should call it to-day. In course of time, these centres like Athens also became convenient points for the location in the first place of various types of handicraft and, later, once they had achieved a certain size, of factory production also. But that was not their original function or the reason for their creation. While the sites selected for these cities may be old camps, existing rural market centres or ports, their organisation will usually be undertaken by a separate and distinct class of person, who usually has no ties, personal or economic, with the locality. The latter will have its own special local tribal organisation and customs which will usually bind its members and their serfs so firmly to the land and the tribe as to forbid them to roam from one tribal area to another, as a merchant must needs do if he is to fulfil his function adequately. The system of land tenure and agricultural practice are also likely to impose rigid restrictions on the freedom and mobility of the local population.

Naturally, as one might expect, once a town reaches a certain size, it will begin to call on the surrounding country for the additional labour its increase in activity will demand. Similarly, it will begin to develop demands of its own in regard to such items as food supplies; it may even seek to promote the exploitation of new types of crops to be used for industrial purposes. Since, under the conditions in which it is assumed that a merchant system arises, all the land round the town will already be fully taken up by the local peasantry, development of the town beyond a certain limit will be impossible

¹ For further particulars see St. J. Orde Browne, *Labour Conditions in West Africa*, Cmd. 6277.

without some radical alteration of the traditional habits and practices of that peasantry. The system of agriculture will have to be reorganised in such a way as to enable it to produce food for the townspeople as well as for the farmers themselves, and steps will have to be taken to prevent the population on the land from growing—as it otherwise would—to the point of absorbing that additional food. Thus, conflict will develop between the organisation of the town and the organisation of the countryside, especially if population pressure has previously led to an extreme subdivision of the rural land. We shall pursue this problem further when we come to consider the growth of the commercial cities of our own economic system in mediaeval times.

Actually, no such conflict apparently arose in the Arabia of Lawrence's day, but this was due to an entirely different reason. A town involves progressive concentration of human beings in a small area, with the result that, unless special measures are taken to prevent it, congestion leads to outbreaks of disease and the operation of other similar population-growth inhibitors. T. E. Lawrence records that in the cities of Northern Arabia (Syria) the birth-rate was low and the death-rate high, because of the insanitary conditions and the hectic life led by the majority. Consequently, any surplus peasantry was able to find openings in the towns, where it was quickly swallowed up. In the Lebanon, where sanitation had been improved, a great exodus of youth took place to America each year.

To commence with extremely simple examples of this kind not only places the economic problem in its proper perspective, but also centres attention on its vital essentials. Another advantage of approaching the study of group economic forces by an examination of the struggles of primitive economic systems remote from our own experience is that it helps us to view our own struggles more impersonally. How dark is our vision of our contemporaries and how clear our vision of other races and times!

Seen against the background of history, past struggles stand out in their true guise, namely, not as conflicts between classes or sections of communities, but as the mutual actions and reactions of different ways of economic living. In the case both of the conflict between the nomad and the tiller of the soil, and of the conflict between the agricultural and the city forms of organisation, neither protagonist

can claim to possess intrinsic superiority over the other; nor can the opposition created be described in any real sense as a struggle between oppressor and oppressed, a method of description usually employed by participants when referring to one another. It will be obvious that the problem in both cases will, as in the case of the cod and the shark, be one of producing some form of equilibrium or balance between mutually interdependent streams of growth proceeding at different rates. In the case of the keepers of cattle and tillers of soil, the rates of growth that have to be adjusted are those of population and economic yield of the land.

The problem in the case of the city is more complex. Here four velocities have to be correlated. First, the rate at which the surrounding agricultural area produces a surplus of population; second, the rate at which that surplus can be absorbed, i.e. provided with jobs by the growing city; third, the rate at which the surrounding agricultural area can, by a reorganisation and consolidation of its previous units, be made to produce a surplus above its own domestic needs to feed the city (and, except in cases where this surplus is obtained by the townspeople in the form of a tax or by "forced" labour, the rate at which the city can produce a surplus of goods to send to the countryside in exchange); and, lastly, as in the case of the purely agricultural systems, the rate of total increase of population on land and city combined must be balanced against the rate at which the whole system is able to provide itself with the requisite sustenance, whether by direct production or by exchange. The centre of trouble in all these cases is the circumstance that, once a wave of growth really gets out of control in any of the items enumerated, it takes time to re-establish equilibrium; by then it may be too late to save the structure of the system from breakdown.

To see how man has endeavoured to tackle these problems of growth-control let us review as briefly as possible the stages by which Britain's economic system reached its present condition. For convenience, I propose to separate, as far as this can be done without distorting events, the problems of agriculture from those of trade and commerce, and these latter, in due course, from those of industry.

CHAPTER VII

STABLE AGRICULTURAL SYSTEMS

The student of the social and economic history of the Middle Ages will be wise to heed the warning given by Professor Eileen Power against the danger of committing himself to generalisations. "Even in the local world of rustic life, which does as sun and soil demand, the custom by which it is ruled may vary from one village to the next. This was especially true of mediaeval times (c. 1100 to c. 1500) when rural society was in a state of flux with estates coalescing and breaking up, towns rising, new land being brought into cultivation in one place and old land becoming exhausted in another, men emerging from serfdom or falling into it, a wave of new population growth getting under way accompanied by experiments in the evolution of new forms of land holdings. All these things happening unevenly in different parts of Europe."¹

Basically, it was the geographical lie of the land which dictated the two main types of agricultural practice which prevailed in Mediaeval Europe, the arable and the pastoral. Wide plains, lending themselves readily to arable cultivation, usually led to the clustered type of settlement known as the village, with houses grouped together and the scattered agricultural holdings lying around them. This was the home of the "open-field" system, with its common routine which, once fully established, proved extraordinarily stable. Its basic framework was the institution known in England as the manor. This rigid organisation not only determined the conditions under which the mediaeval peasant passed his life, but also his personal status and relations with those in authority over him. A manor in an arable district usually contained a more or less large home farm cultivated in part by servile tenants. The home farm and the peasant holdings were bound together in a single economic system by other labour services and also by the fact that the lord, no less than the peasants, was subordinated to a common routine of cultivation and bound by certain established rights and usages. The details of certain of the typical structures of this system will be described presently.

¹ *Camb. Med. Hist.*, Vol. VII, Chapter XXIV.

Hilly country, on the other hand, more suitable for pasture farming, led to a different way of life. Scattered hamlets and separate farms, spread over a wide area to conform to the needs of flocks and herds, replaced the larger villages and rural *bourgs* of the arable districts. In these hilly, pastoral lands the hold of the manorial system was weaker; indeed, in the remoter mountain districts the peasants were often quite free—there was practically no “group” structure of any kind. This came later with the development of the woollen industry.

It is important to realise that, for most of the earlier part of this period (c. 1100 to c. 1300), the land was under-populated, so that not even all the arable land was subject to feudal organisation. As in the case of America in the nineteenth century, there was still much “free” land—marsh and forest land which could be made serviceable by draining and clearing, and also unoccupied land on the frontiers of the settled areas—available for exploitation and colonisation by those in whom the pioneering spirit was active. Land was being won from moor and forest and sea; pastoral or semi-pastoral living was giving way to agriculture. The ploughman, “the grey-haired enemy of the wood” of the Anglo-Saxon poet, was everywhere carrying on his slow feud against the forest.

Unlike Southern Europe where, even in the darkest ages of Europe’s history, when whole districts had been thrown out of cultivation, some remnants of civilised agriculture had continued to exist, contemporary Celtic, Teutonic and Northern Slavonic systems of tillage had never been influenced by the agricultural specialisation that commerce brings with it. They had to start from the beginning.

It is not difficult to surmise how the continuous cultivation of the land by the earliest communities was evolved, or how its bounds were fixed. When the tribes were small and the land available for each was unlimited, it was convenient to break fresh ground yearly, so as to take the maximum advantage of stored-up fertility. But as the communities grew, this practice was limited, partly by the necessity of finding land within a reasonable distance of the settlement, and partly by the competition of neighbouring communities for the land. And so a time came when the land must be put under tribute more often until, ultimately, a point was reached at which no more than half of it could be rested in fallow. In this way, probably, the “two-field” farming

system was evolved, under which alternately one half of the ploughland of the community was cropped and the other half was fallowed. This system, as described in the text-books, consisted mainly of five components: the dwellings, with their "home closes," generally clustered together; the two small arable fields, cropped and fallow in alternate years; the meadows; the waste (or common), including in many parts woodland; the manorial demesne, comprising or including a compact area near the dwellings. The villager's holding lay in narrow strips, roughly a furlong in length, and about an acre or half-acre in area (a more or less equal number in each field), and usually included a few strips in the meadows. His strips were scattered over the open fields, and intermixed with those of other villagers. There were, of course, variations; but compact, round or square-shaped villages, like the string of Cotswold villages between Bredon and Beckford, with the cluster of public buildings at the centre—a ring of farms round them like the rim of a wheel, and the fields surrounding the villages—still retain the form and significant pattern which first gave reality to the community idea in the early villages.

These village communities employed a co-operative system of cultivating the land to feed themselves and their families. Notwithstanding a little external sale and barter, the idea of commercial farming in the modern sense was quite unknown. Each little human settlement was almost entirely self-contained, producing and fashioning nearly everything which it required to satisfy its needs; and what was true of the community as a whole was true, in the main, of each of its members. It follows, of course, that there was no division of the village community into several categories, social and economic, such as have been evolved since, as, for example, husbandmen and tradesmen, large farmers and small-holders, milk-producers and market-gardeners, stock-breeders and graziers. Each member was farming to produce sustenance for his family and nothing more, and for this the needs of all were the same. And so it follows that there was no demand for land beyond that which the village community must occupy to supply itself, for in the absence of opportunity for the sale of surplus produce, there was no inducement to any member to occupy more than would satisfy his own needs.

★ It is clear that the two-field system of farming was expensive of land, only one-half of it being applied to productive use in each

year. When the village communities were small, and the land was plentiful, this might not matter, but, as population increased and the need for greater food-production grew, the wisdom of a more economical use of the land must have suggested itself. For a time, the need for expanding fields was doubtless met by encroaching on the waste, but, as townships grew, the neighbouring villages arrested further appropriation of the waste and rudimentary boundaries were settled—ultimately our modern parish or manor boundaries, with or without modifications. If the community was to continue to grow beyond this, without engaging in war with its neighbours, some new system was required which would enable it to make still better use of existing territory. The final step in the development of this routine, taken by the close of the tenth century, was the introduction of the more familiar three-field system. One-third only of the cultivated land was now left fallow; one-third was sown in the autumn with wheat or perhaps rye, crops needing a long growing-season to give a full harvest; one-third was sown in the spring with barley, oats, spring beans, or peas, crops which come to harvest in a few months. The extent of the revolution entailed is generally underrated, probably because it took several centuries for the new system to replace the traditional two-field arrangement. The two-field system itself was only one of several growths from that most primitive form of agriculture in which fields have no permanent existence, but revert periodically to rough pasture, or, it may be, woodland. A variant of it, which is of some interest, consisted of an "infield" near the village or homestead which was cultivated, with an "outfield," or series of "outfields," cropped in turn so long as they would bear and then allowed to revert to waste. This remained the basis of Scottish agriculture down to the eighteenth century and is of interest because, writes Professor Clapham, "owing to the very flexibility of its rude practice, it proved less obdurate, when a stimulus to improvement was forthcoming, than the relatively perfect but very rigid organisation of the two or three-field system; but in the earlier centuries of the Middle Ages it must still have been a mere unprogressive barbarism."

The three-field system compelled the individual to submit to a far greater limitation of personal freedom than ever before. He could no longer grow what he liked and when he liked. For the essence of

the system was that its practice called for the rigid adherence to it of every member of the village community. Even the right to turn out livestock to graze upon the stubbles after harvest, for example, was so jealously guarded as to make it impossible for anyone to grow a crop different from that for which custom called, if it would still be upon the land when his neighbours had gathered their corn.

Some writers have gone so far as to suggest that the scattering of the holdings of a single owner over the fields in this and the earlier system was deliberate. This haphazard apportionment was intended to ensure that even the smallest holder would have his share of good land and to prevent the larger owners from joining their strips together to monopolise the land.¹ The idea is that the agriculturists of those days realised that it was not possible to have the best of all possible worlds. It was a question of compromise—to select a condition of equilibrium which combined reasonable liberty of action with communal security. Be that as it may, it is agreed that the mediaeval village was never simply a casual collection of individuals, but rather a compact *organised* group—a joint farm, “cultivated in partnership and by a group whose interests, activities, privileges and obligations were enjoyed and respected by the shareholders of the whole community.” This system has been described in some detail, partly because it was the precursor of our present system of four-course rotation, but mainly because it was a *closed* system. *It could not outgrow its most convenient size*. Famine and pestilence might cause temporary fluctuations but there could be no long-term change.

There were, of course, other factors beyond those mentioned operating to limit its growth in size. The primitive means of transport employed would prevent the community from extending its circumference more than a relatively short radius from the village centre, and this factor would help to reinforce the check imposed by the circumstance that there would be a limit to the number of scattered strips which could be handled by any one individual in a given time. The plough and the harrow were the only aids to manual

¹ It will be remembered that Plato has a similar arrangement in the ideal system sketched out in the *Laws*. The inalienable plot of land allotted to each citizen is to be divided into two parcels, one near the city, the other near the frontier. The object was to prevent any concentration of the best and most favourable land (745 c).

labour; sowing, reaping, and other operations were then performed by hand: an acre strip was approximately the right-sized economic unit for corn production under this system.

There was no provision for expansion by external commerce. Thus, a bumper harvest might result in a temporary increase in consumption and, possibly, some might be stored and less planted the following year. But the balance had to be allowed to rot *in situ*. It could not be consumed by the community, as each individual member would, *ex hypothesi*, have ample for his personal needs, and it could not be lent or sold outside the area, as there was no contact with possible external purchasers or borrowers. Obviously, an arrangement such as the open-field system would be extraordinarily difficult to alter and replace by a more productive one. It would necessitate a complete disruption of the whole way of life of the community, as well as the destruction of all the various social and economic barriers erected over years to keep the forces of growth in check and preserve the equilibrium between population and environment appropriate to the system. The rule of the village not only left no opportunity for the introduction of new crops by the more go-ahead members of the community, but even the landlord himself was powerless to alter this state of affairs. Since the demesne land was often intermingled with that of the customary tenants, he could not even indulge in experiments on his own land without permission of the whole village. Besides, the acre strip was not a large enough unit to give scope for efficient use to be made of such modern mechanical inventions as the seed-drill and the reaper. It was these limitations, amongst other things, that in the end helped to provide economic support for enclosure by Act of Parliament.

The historical fact mainly responsible for modifying this system, in the period prior to the industrial and agricultural revolutions of the eighteenth century, was the growth of towns and commercial centres and the consequent need for additional food supplies. Even as early as the eleventh century, the populations of the existing towns were already too large to be fed by local produce—that is to say, the surplus that could be obtained from the land as then worked, after providing for the sustenance of its occupants. Additional foodstuffs were derived partly by commercial interchange with localities where there was a surplus, partly by the opening up of new land and partly

by breaking up the open-field system and introducing a more productive system in its place. The transforming power of nearness to a young town, due to the demand for the production of additional quantities of necessities or of some new crop needed by commerce, can be observed everywhere in this period, but most especially in the Mediterranean lands.

The gradual extension of crops, other than corn, in the more northern regions was facilitated by the fact that much of the land which was then being reclaimed from the waste was not subjected to the intermixed arable routine of the open-field system; it could be consolidated and used for some special crop. Agrarian specialisation and "single crop" farming grew, and, as it called for individual cultivation, even small peasant holdings could be made profitable under it.

Thus, the growth of towns led to the increasing diversion of the land in their neighbourhood to dairy farming and market gardening, to meet the demands of the town population for food. It led also to a corresponding weakening of feudal ties and the old type of landlordism. The rise of industry, in its turn, brought a demand for new types of crops—industrial crops—such as woad and albi. A feature which marked the rise of the towns or commercial centres all over Western Europe was a new wave of population growth. Professor Eileen Power referring to the marked acceleration of change in the twelfth and thirteenth centuries writes: "Three movements in particular affected the life of the rural districts: the rise of towns, the impetus to clearance and colonisation, and the disintegration of the manor. All were connected with a still more fundamental economic movement, the growth of population."¹ In regard to Germany, where these developments have been more closely studied, we are told that the commercial towns grew very rapidly during the twelfth and thirteenth centuries. Then some time in the fourteenth they mostly stopped growing. From that time until the nineteenth century their areas, according to A. Püschel, sufficed for their inhabitants. The slowing down of urban growth reacted dramatically on the countryside, for the town population was obviously being increased by immigration from outside. It caused severe overcrowding in the countryside and this in turn led to other notable changes. Professor Eileen Power

¹ *Camb. Med. Hist.*, Vol. VII, Chapter XXIV.

observes that "it is significant that this was the period when the colonisation movement of the German people beyond the Elbe was most active." It was associated with the constant creation of new villages, accompanied by improvements in technical efficiency. Professor Clapham notes that in some areas there were signs of distinct technical advance from a two-field system to a four-field system. He writes, "There can be no doubt that the pressure of population in old-settled districts furnished an incentive to the colonists to adopt less wasteful forms of agriculture." In existing rural areas, the increase in numbers was reflected in the increased subdivision of holdings, in a steady rise in land values, and in the carrying of cultivation as far as the technical knowledge of the time allowed, even to land from which economic return was poor and which had to be abandoned later in the Middle Ages. "Checked though it was by famines and pestilences, this upward movement of the population continued and is at the bottom of most of the economic changes of the time," concludes Professor Eileen Power.¹ By the end of the thirteenth century, the agricultural occupation of their territory by the northern nations was approximately complete. Then plague and the other offspring of congestion began to take their toll.

Thirteenth- and fourteenth-century Flanders furnishes the extreme instance north of the Alps of the effect of the towns in causing a transformation of small-scale mixed crop farming into large-scale single crop farming. The great Flemish estates of the Cistercians and many of the nobility produced for the towns. Such estates were often let out to rent-paying farmers. Locally agriculture became extensively specialised: there were cattle districts; corn districts; woad districts. Commons almost disappeared. Similarly, in Northern and Central Italy, a system of large estates let out on rent had become common by the close of the thirteenth century, as a result of the victory of the rich commercial urban centres over a feudal society. These landlords were able to accumulate capital, part of which was invested in their estates. In addition, of course, the urban demand for meat, milk and cheese enabled even the small cultivator to keep livestock and share in this prosperity.

This change of economic pattern naturally did not occur in all parts of Europe at the same time. It happened first where the bonds

¹ *loc. cit.*

of the old system were weakest, as in pastoral districts, or where specialised crops, such as vines, were already being grown for an outside market, or where "untied" uncultivated land was in process of reclamation. The spread of the system to the big corn-growing manors did not take place until the economic revolution responsible for the growth of the towns had made considerable headway.

The dissolution of the old manorial organisation, and the emancipation that went with it, were accompanied by a marked improvement in the position of the peasantry. "Probably at no time in the Middle Ages was agriculture more flourishing and the mass of the rural classes better off than during the twelfth and thirteenth centuries." The rise of the towns and the need of reclamation, especially in Eastern Europe, as we have seen, were providing an outlet for the surplus population and raising both the income and the status of the rural classes as a whole. But there were other factors at work on the peasant's behalf. Between the tenth and thirteenth centuries, the growth of the population, the clearing of virgin land, the development of agricultural technique, and the rise in price of agricultural produce increased the economic rent of the land to a considerable extent. Lamprecht has calculated that land in the Rhine and Mosel districts was worth, at the end of this period, about seventeen times what it had been worth at the beginning, but the old customary rents remained the same, with the result that something like four-fifths of the unearned increment was going into the peasant's pocket. The purchasing power of money was steadily falling during the period, so that wherever payments were fixed in money the peasant benefited by this too. "It is these facts which account for the shipwreck of large-scale demesne farming in the twelfth and thirteenth centuries, and for the desperate straits of so many great Abbeys; they explain, also, the readiness of the lords to sell emancipation and the ability of the peasants to buy it."¹

The advance of the rural classes was not, however, everywhere maintained during the latter part of the Middle Ages. In France, the Hundred Years War undid a great deal of the benefit, and some of the most fertile land in Europe was reduced to the utmost poverty. By the middle of the fourteenth century it had become clear that the mediaeval economic system was outgrowing its most convenient

¹ *loc. cit.*

size. This did not become obvious in all parts of Europe at the same time; nor did the strain make itself felt in the same degree everywhere. Unfortunately, information in regard to this period is so scanty that, unlike our own time when a similar condition has been reached, we cannot follow the process of breakdown in any detail. But it is agreed, according to Professor Clapham, that had the rural population of Europe not stopped growing during the closing centuries of the Middle Ages, fundamental adjustments in technique would have been inevitable.

"But plague—especially the great visitation of 1349—warfare, and possibly the more subtle social causes which tend to preserve the balance between populations and resources, rendered anything of the kind unnecessary."¹

While serfdom was the main problem of the twelfth and thirteenth centuries, the main problem of the fourteenth and fifteenth centuries was the modern question of free landless labour, its wages and conditions of employment. Conditions on the land given over to single-crop commercial farming, or to the service of the towns, were largely responsible for this. In so far as the accommodation of labour was concerned, there might be room for more wage-earners, but not for more *settlers* upon the land. The essence of the commercial system of farming was to provide a surplus of food for the personal consumption of townspeople or for export. This meant that over the years the labour required to produce a given quantity of food must be progressively decreased; only in this way could the quantity of food needed for consumption by an expanding population of townspeople be raised. To have allowed peasants to settle on the land and develop it in the old way would have defeated this object. This is a point in regard to which historians appear to have done less than justice to the urban landowners of those days. Unless these landowners had, in a sense, oppressed those working on their land—that is, kept down their standard of living and refused to allow them to enjoy the full fruits of their toil—the towns would not have obtained from them either food or a contribution in the form of taxation towards meeting the ever-increasing overhead expenses involved in operating the whole system. If labour had been allowed to settle on this land, as in

¹ The Black Death of 1347-49 caused for a time a severe under-population crisis: over a quarter of the population of Europe is believed to have perished.

the days of the old manors, then their numbers would soon have increased to the point at which there would have been no surplus of food for the towns. Thus, the urban landowners refused to accept additional population on their land at a rate faster than would be called for by the needs of their estates, and then only as *landless* servants, whose wages were kept down by rigid regulation.

We read that the Italian peasantry, who had been emancipated from the manorial system largely through the support of the towns in a common struggle against the landed nobility, complained that they had exchanged one form of bondage for another. "If the lords had chastised them with whips, the burgesses chastised them with scorpions." For the cities subordinated the countryside to their interests.

"In the whole territory of Florence in the fourteenth century, there was hardly a rood of land that was not owned by merchant bankers and even artisans." These strictly regulated agriculture, forcing labour to work at fixed wages, burdening it with taxation and, above all, fixing the price and forbidding the export of agricultural produce, in order to secure the food supply of the town. But the town became the implacable enemy of the countryside in another respect also. Attempts were made to set up rural industries to provide employment for those required neither in the towns nor in agriculture. All such attempts were ruthlessly suppressed by the towns. History records that both in Flanders and Italy constant sorties were made by the townsmen to break up the looms of the peasants.

As commerce grew, the desire to increase capitalistic estates operated by landless labour grew also. Large estates, devoted increasingly to corn-growing for export, evolved. Both the additional and the additional labour required for this could be obtained from two sources only: the manorial land that still remained, and the estates worked by tenant farmers.

These new types of great estate, which appeared in the course of the fifteenth century, developed furthest in those trans-Elbian lands which, in the first period of colonisation, had been essentially the home of free German settlers. Thus, Eastern Europe brought into being a new type of serfdom, just as Western Europe was witnessing the final extinction of the old. These estates, which were organised for market production on a large scale, grew greatly in size. In time

they began to suffer from a shortage of both land and labour. Fresh land was obtained by a purchase of peasant farms and by enclosure. The additional labour supply, however, raised a much more acute problem. Wars, and the needs of the town, were already making heavy calls on the populations of the rural districts. Besides, the supply of landless labour was inelastic. To augment their labour resources, the new landlords began gradually to restrict the freedom of movement of rural workers—even those seeking to move to the towns. The work of the big estates came to be done more and more by labour services exacted from the once free peasantry. This new type of estate, accordingly, became the enemy not only of the cities but also of the older systems of agriculture. This stage of evolution, it is true, only reached its climax in the sixteenth and seventeenth centuries. But already in the fifteenth century we find attention being drawn to the marked contrast between the corn-growing estates of Eastern Germany and the rent-gathering estates of old Germany.

In England, also, this new type of tenancy made its appearance during the latter part of the fifteenth century. Peasant farms were swallowed up, and large-scale estates organised. But, unlike the German estates, the earlier English estates were devoted not to corn-growing but to raising sheep. Their demand for labour being much less, the principal effect of enclosure in this case was to create a certain amount of unemployment and over-population in the sheep-rearing districts. A cotton-spinning and metal-working generation is apt to forget that "the greatness of England was built up, not upon the flimsy plant which comes to her to be manufactured from the Far East and West of the world, nor upon the harsh metal delved from her bowels, but upon wool which generation after generation has grown upon the backs of her black-faced sheep."¹ Wool first showed its importance as a raw material eagerly sought by all the cloth-makers of Europe, and then as an object of final manufacture carried out in English towns and villages and sent out in English ships to the markets of the world. Wool was the foundation of England's commercial prosperity right up to the time of the Industrial Revolution when iron, coal, and cotton took its place. First came the company of Merchants of the Staple, who held a monopoly of trade in wool; next, in the

¹ Eileen Power, *Mediaeval People*.

fifteenth century, there arose to compete with them another famous company—the Merchant Adventurers—who, taking advantage of the growth during the previous century in native cloth manufacture, had begun to do a great trade in the export of cloth.

The closing centuries of the Middle Ages found the common people of most European countries pervaded by a spirit of discontent and frustration. A wave of growth and expansion had reached the end of its flow. After having been carried forward by a stream of population growth and co-operatively created prosperity for nearly three centuries, they now found themselves in the throes of a crisis of over-growth and structural breakdown.

The Renaissance marked the culmination of this wave of economic change, which had begun to pass over Europe as early as the fourteenth and fifteenth centuries—long before the birth of the new idea of human life and culture which the Revival of Learning was to make manifest. Contributory factors were: the decay of the Church and Empire and the ideas which ruled the Middle Ages, the breakdown of feudalism and the emergence of nationalities and languages. New inventions like printing, gunpowder and the mariner's compass quickened the strides of change, as also did the exploration of unknown continents beyond the sea. But neither the quality nor the direction of these changes was comprehended by their contemporaries.

After the middle of the fourteenth century, peasant risings became more frequent and general, sometimes assuming the proportion of a real "green revolution." This effervescence in the rural world was accompanied by the appearance of a new spirit in the countryside, a spirit half religious and half Utopian—something more significant than the old revolts against the exactions of lord and city. There was an insistence on the dignity of the common man, a belief in individual effort, a kind of mystical pre-vision of that spiritual rebirth which a later age was to know as the Renaissance.

Before examining the manner in which this spiritual uprising led to the complete collapse of an economic structure based on local units, and prepared the way for a system based on national units, the above review of the leading features of mediaeval economic evolution on its agricultural side must be supplemented by a brief description of the leading developments on the industrial and commercial side.

CHAPTER VIII

THE MEDIAEVAL CITY: A BALANCED COMMERCIAL SYSTEM

The Roman Empire, as a whole, had in all respects constituted a Mediterranean unity. All economic and commercial activity gravitated towards this central sea. The Germanic invasion in the fifth century did not, as is generally supposed, put an abrupt end to this arrangement, except in Britain. Commerce was still carried on through Mediterranean ports as late as the eighth century. Urban life also continued active.

These survivals of Roman and Mediterranean economic civilisation were destroyed by the irresistible flood of Muslim invaders which, in the middle of the eighth century, overpowered and subjugated all the regions bordering on the Mediterranean basin. The Mediterranean Sea ceased to be a great commercial waterway and became a barrier. "What then occurred, was not merely a political revolution but an economic catastrophe. The wealthy and busy commercial ports became impoverished and depopulated; maritime trade and all activity associated with it disappeared; the class of professional merchants which they had supported vanished. Europe's economic organisation dissolved into its pristine elements and economic man was compelled once again to start building the economic organisation of his desires from the first foundations."

The characteristic feature of this new beginning was, as we saw in the last chapter, the self-supporting agricultural estate, the products of which, instead of being intended for the market, were used only for the consumption of the owner and the men, women and children living on it. An estate of this kind formed a closed world which required no outlets. As a rule its population consisted almost entirely of peasants who were mostly serfs. Not even the vestiges of urban life had remained. What had been cities had become little more than fortified enclosures, wherein priests, clerics, monks and their indispensable servants sought protection against barbaric warriors. "That which had formerly been the distinctive mark of the 'city' had disappeared. Merchants were no longer to be found there and the

city was no longer the trading resort and economic centre of the surrounding country."¹ A small market was held once a week, to which the peasants of the surrounding countryside came to sell their small surpluses of the common articles of consumption and where, occasionally, a wandering pedlar appeared. But "commerce and industry played no part therein and did not contribute to the livelihood of anyone as a regular profession." A town of this period was thus merely a concourse of the local people collected within its walls, living in the same manner and conforming to the same social and legal conditions as those living on the land outside. During the period of insecurity and anarchy which overwhelmed Europe from about 850 until 1000, these towns or *bourgs* played a part as fortresses similar to that played by the forts and blockhouses built by the white population of America in the seventeenth and eighteenth centuries as a defence against Red Indian attacks.

The security which these *bourgs* afforded naturally caused them to become centres of government. For this reason many of them, though never themselves becoming actual centres of urban life, helped to determine the localities for the commercial and industrial groups which were to form the towns of later days. There was, it is true, a small amount of commercial activity on the larger estates: harvests sometimes had to be transported considerable distances to the principal centre; churches, overwhelmed with gifts far exceeding their needs, were obliged to dispose of the surplus, and the small markets of the cities and *bourgs* gave rise to some business transactions which, although doubtless of little importance, were regular. What was lacking, what had disappeared, was the class of merchants by profession. In the ninth century, the only individuals exhibiting the distinctive features of merchants were a few Jews and Italians who seem at that time to have devoted themselves, under conditions about which little is known, to the hawking of spices and oriental textiles which they transported, no doubt with much difficulty, from Venice across the passes.

Towards the middle of the ninth century, the Norman invasions interrupted even this slight commercial movement. The rivers on which this trade had been plied were now, for about fifty years, used by the invaders as routes along which to penetrate the interior and

¹ Henri Pirenne, *Camb. Med. Hist.*, Vol. VI, p. 506.

remove booty. Curiously enough, thereafter, the descendants of these self-same invaders became the leaders in a new surge of commercial and maritime activity. Contact between Northern Europe and the much more highly developed civilisations of the Byzantine Empire and the Caliphate of Baghdad was regained by way of Russia. Almost at the same time commerce was restored by another route, that of Italy. By the beginning of the eleventh century, Venice was already a great port, and Genoa and Pisa had begun to show signs of their future greatness by reopening for themselves, after bitter struggles with the Saracen fleets, that sea which had been closed to them by the great Muslim invasion of the eighth century. Thus, on the one side, by the invasion of the Scandinavians, and on the other, by the enterprise of the Venetians, trading centres were revived at the two ends of Europe.

The revival of river navigation in the tenth century had provided the first significant symptom of a new wave of commercial activity. The essential feature of trade at this period was its wandering character. The merchants devoted to it were travelling merchants, collecting in parties and travelling either by boat or by road, to transport wheat, wine, wool or cloth to distant places. The spectacle was very similar to that offered by caravans in Asia at the present day.

By the eleventh century these merchants had become a class of professional merchants, to whom trade was not an adventitious and occasional occupation but a habitual, regular and normal one. Whence came these merchants? Detailed evidence is not available. Some, as we saw, were Jews and Italians, migrants descended from ancient centres of commerce in the Mediterranean basin; others, according to Pirenne, we may suppose were bold and intelligent adventurers—outcasts from the agricultural estates. Having no land, they were compelled to live from hand to mouth by bodily labour, hiring themselves out at harvest-time, engaging as mercenary soldiers and the like. The recrudescence of commercial activity afforded to many of them an opportunity of employment and amassing a fortune. Then their example attracted a large number of younger men. In other words, these individuals provided that nucleus of unused labour without which a change from one form of economic structure to another form—be the change large or small—

is impossible. Once the new wave of economic activity had got under way, the inevitable increase in population that would supervene would swell the number of these men and make recourse to migration from rural areas less necessary. The chief source of commercial profit in these times was, above all, the frequency of famines, and we know that contemporary merchants were skilful in taking advantage of them. An easy way to fortune was found by transporting a few sacks of corn to those districts threatened by famine. The next stage was the organisation by these merchants of an economic system suited to protect their interests and advance their ends.

Every kind of economic activity necessarily implies certain points of concentration, dependent on the nature of the activity. The ends of gulfs, the mouths of rivers, the confluence of two rivers and the spots where rivers cease to be navigable, are designed by nature as halting-places for merchants in transit. In the turbulent society of the Middle Ages these places, to serve their purpose, had in addition to provide both a minimum of accommodation and a minimum of security. Thus it was that centres of urban life came to be concentrated in the relatively few places where convenience of transit could be combined with the social protection of established authority and the material protection of the strong walls of ancient towns or *bourgs*. Details of how merchants came to be established in these centres are unknown to us. But whether they began by settling within the towns or not, we soon find them using these as nuclei around which they established new towns of their own called *Nouveaux bourgs* or *faubourgs*, which soon expanded, till they greatly exceeded in radius the original *bourgs* of the countryside, which did not grow, since the necessities which they served remained stationary.

As commercial activity increased, so did the *faubourgs*, together with the number of settlers in them from outside. These suburban populations continued to grow until towards the end of the thirteenth century. As one might anticipate, it was not long before a conflict began to develop between the system of the *faubourg*, with its commercial class, and the system of the *bourg*, with its more rigid organisation and rules based on agricultural custom. The reason of this conflict was the legal status of the inhabitants. In the *bourg*, only the clergy and knights were free, the rest were tied; on the other hand, in the *faubourg*, the merchants and other immigrants alike

participated in freedom. But the personal liberty of the latter did not involve any right to self-government, or the enjoyment of any special law or jurisdiction appropriate to their profession. Since the organisation of the *bourg* only met the requirements of a sedentary, rural and feudal society, of which it was the administrative and military centre, it was entirely unsuited to the needs of a mobile society of merchants, whose system was based on personal freedom and property. The *faubourgs* claimed and ultimately, to a certain extent, obtained enfranchisement of the land on which they had come to dwell and autonomy of government. "Safety and orderly life are impossible, save in association, in group life, and the associated Burghers replaced or competed with the feudal or kinship groups which preceded them. Local and personal law was the rule, and the Law of Merchant and Town took its place by the side of other local and class customs."¹

As the economic condition of Europe changed under the influence of the rebirth of commerce, an increasing number of localities were moved to join in the new life. The bourgeoisie spread in all directions. Like every other age of substantial material progress, the Gothic Age was, as was pointed out in the last chapter, a period of rapidly growing population. It lasted longer than any other period of great prosperity the European peoples were to enjoy until the eighteenth and nineteenth centuries. Between the tenth and early fourteenth centuries, the population of the newly established Holy Roman Empire is believed to have increased something like three-fold, while that of England and Wales perhaps doubled. Hundreds of thousands of peasants gained their freedom from serfdom, and the area of cultivation and pasturage was extended in every direction into wooded, hilly, and even mountainous country. The towns grew in prosperity. The creation of many new openings in trade, finance and even industry resulted in the amassing of what for those times were considerable fortunes. This wave of growth came to an end before the Black Death of 1347-49, and a period of economic disorder ensued, leading as we saw in the last chapter to an overpopulation crisis in rural areas.

Nevertheless, the towns of this period continued, in the main, to be commercial rather than industrial centres. It is true that to draw a

¹ Previté-Orton, *Camb. Med. Hist.*, Vol. V, p. 208.

sharp distinction between these two types of activity in mediaeval times is not easy. The typical mediaeval craftsman was usually also a shopkeeper and, in the larger cities, his interests and outlook were those of a dealer rather than maker. But commerce gave greater opportunities for making money than industry. According to Professor Clapham, the representative town of fourteenth-century England was a town like Liverpool, with about 1,000 inhabitants. In such a community, the roads to wealth would be few and limited. "The five fishmongers, the four drapers, the four bootmakers, and the two tailors, who formed the trading population of Liverpool, had not the opportunities of a London Alderman in the days of Edward II." If anyone became rich it would be the fishmongers rather than the bootmakers. This is not surprising, when it is remembered how small the scale of industry still was, how difficult the means of communication, how dominating the influence of handicraft and how rare the existence of any form of expensive mechanical appliance. Townsmen and countrymen alike provided, to a great extent, their domestic needs by the labour of their own families. Those needs were simple, and the population to be catered for, both in town and country, was quite small.

Besides, definite attempts were made to prevent any craftsman rising above his fellows. Often there were as many masters as men. Throughout Europe, in many crafts, the master was often only a jobbing workman called in to handle materials supplied by his customers. "In occupations such as carpentering, in which the matter sold was not goods but services, he was paid only about 20% more than his mate in fourteenth-century England, a difference which can be taken as a rough measure of the distance between employer and employed over a large part of the industrial field of Europe."

Undoubtedly the most interesting and fascinating structure created by the urban civilisation of the Middle Ages was the Craft Guild, first established in the course of the twelfth century. It was originally designed to assist artisans of the same craft to buy raw materials and control outside competition. At a later stage, the municipal authorities made these associations compulsory and regulated their proceedings. Pirenne says of the Craft Guild that "it provided a solution of the labour problem, admirably adapted to the conditions of a period in which currency and capitalism were still in

their infancy. Its great merit was that it ensured alike the economic independence of the producers and the interest of the consumers. It only produced its full effects, however, in its application to the local markets, i.e. as far as it was applicable to the industries working for the urban population. The exporting industries such as, for example, the weaving industry in the large towns of Belgium and Northern France, were not so successful in adapting themselves. The international markets for which they worked, and the substantial capital they required, did not permit them to submit to a system created for a restricted market and for small producers equal among themselves; this system was incapable of averting conflicts between capital and labour, which first appeared in all their gravity during the course of the thirteenth century. But these were quite rare exceptions. They do not prevent us from regarding the industrial organisation of the mediaeval towns as a masterpiece of its kind. We know with what persistence it survived throughout the centuries, and with what tenacity it resisted, in modern times, the inevitable changes which resulted from the improvement in communications, in technique and in capitalism until the time when the revolutionary movement at the close of the eighteenth century destroyed it, perhaps too violently." These Guilds controlled production and sales in such a manner as to keep consumption of materials adjusted to the life of the community and the capacity of the environment. They deliberately prevented the distortion of the group life by the private exploitation of materials by individual ownership and greed. By their protection of the consumer, the craftsman and the city life they granted the common man a charter of access to the wealth of the community. But the lure of conquest and wealth proved too strong, and the common man was induced to give up his liberty to share in the common stock and the common life by the hope that he might obtain an even larger liberty by deliberately destroying his organic relationship to the soil and the region.

As in the case of the economic organisation of the land, forces of disruption were already getting to work even before the fifteenth century, though, with few exceptions, the leaders of the period by no means appeared to themselves as harbingers of revolution. As Previt -Orton remarks—"They were so, not so much because they invented new things as because they failed in maintaining and

revivifying the old, and resigned themselves discontentedly to their failure. They hardly recognised that other instincts and motives were leading them towards fresh modes of thought, a fresh outlook on life, a fresh direction of society."¹

They little realised that they were living on the eve of the dissolution of the spiritual and physical unity of Christendom; that the economic organisation of Europe was to be translated from a local to a national basis and that the stream of European commerce was to be swollen to include vast new worlds overseas.

By the fourteenth century Western Europe, especially France and England, had reached the last stages of feudal monarchy as a political system. But the old economic order, in the main, still prevailed. It was an age of disillusionment and deadlock. The old ways seemed devoid of hope and profit, and the new impulses, which were to create the future system, still operated blindly. The two preceding centuries had seen the beginnings of capitalism based on large-scale export, but this had been built up on a pattern which had as a central feature a certain number of great towns located on the routes of traffic which were losing their importance. Besides, in all these towns, trade even in its most capitalistic form was organised and regimented by local Guilds and subject to the *local* group-system rooted in the older times and, in consequence, filtered by the narrow local spirit of monopoly which did not transcend its town origin.

As the radius of the circle of territory under a single national political authority expanded, it became impossible for the towns and their industrial and commercial classes to continue what now took on the guise of a dog-in-the-manger policy in their relations with the countryside around them. At a time when the towns were feeling confident that they had secured a decisive victory in their conflict with those engaged on the land in rural industries, the ground was being mined under their feet. The Flemish towns were to see their carefully regulated cloth-manufacturing industries dwindle and die in face of the onslaught of a new race of capitalists, who employed villagers without the restriction of hampering traditions and customs; new free ports, like that of Antwerp, were, by the freedom they offered, to capture the custom of the international banker and merchant; the development of the herring fisheries of the North Sea was

¹ *Camb. Med. Hist.*, Vol. VIII.

diminishing the prosperity and shipping activity of the Hanse towns of the Baltic and enhancing those of Holland and the English eastern coasts.

In the Mediterranean, unified France and Spain proved too powerful rivals for the Italian City States. "Over all the West the star of the City States was paling before the formation and cultural advance of the Country State with its varied and abundant resources." Coincident with these changes the westerly countries, too, were enlarging both their products and their enterprise. The Portuguese were turning to the exploration of the African coast. Progress was slow, but the profits in the trade in gold, ivory and slaves were high. The art of shipbuilding took on a new lease of life once it ceased to cater primarily for the needs of the limited, monotonous, Mediterranean Sea. It was still the Middle Ages when, in 1486, Bartholomew Diaz rounded the Cape of Good Hope and opened the route soon to be travelled to India. Columbus performed a similar service for trade with the New World overseas, by discovering America in 1498. By those discoveries the Mediterranean Sea and Italy were doomed to be reduced to side arteries. The "Oceanic" wave of commerce was about to begin. But the world had to wait over three hundred years before conditions were to be ripe for that wave to reach the peak of its flow.

Developments during the Middle Ages in agriculture and commerce and industry thus exemplify the theoretical analysis with which the earlier chapters of this book were concerned. Changes in environment, followed by a general increase in population, leading to a change in the demands made on that environment, result in adaptations and re-groupments of the human factors involved and of the patterns in which society organises itself.

The next age witnessed not only an almost complete destruction of the forms and controls of the mediaeval pattern but the beginning of a wave of uncontrolled growth at the compound interest rate.

CHAPTER IX

INDIVIDUALISM AND UNCONTROLLED GROWTH

The next wave of prosperity in Europe occurred in the late fifteenth and early sixteenth centuries and was associated with fresh advances in discovery, colonisation and economic progress. Between 1450 and 1530 the annual output of silver in Central Europe probably increased fivefold and the production of iron, copper, tin, salt and cloth grew almost as rapidly. Printing was introduced in scores of continental towns; such products as paper, soap, glass and gunpowder were produced in considerable quantities for the first time. A flourishing mercantile society came into being and with it a profusion of merchant palaces, town halls and other municipal buildings, and castles built mainly outside the old towns. This industrial expansion of the Europe of the Renaissance was accomplished by an increase in the size and scale of industrial units, the use of more powerful mechanical appliances, and by the bringing together in larger and larger establishments of various industrial processes and workers engaged on the same product. Nevertheless, it did not lead directly to the industrialisation of modern times. Neither the political nor the social environment was yet ripe for that change. So the movement died away and was followed almost everywhere on the Continent by a long period of industrial stagnation, even retrogression.

Not until the torch of commercial and industrial leadership had passed from the luxury-loving countries of Europe, South Germany, Spain and Italy, to the harsher climatic regions of the United Provinces, Sweden and, above all, Great Britain, did the modern industrial age really begin.

Contrary to the popular impression, the first "Industrial Revolution" occurred, not in the eighteenth century, but in the hundred years that followed the Reformation and the dissolution of the monasteries in 1537 and 1539. Like its successor in the eighteenth century, it was accompanied by such a marked growth in population that on the eve of the Civil War in 1640 there were quite possibly nearly twice as many Englishmen in the world as at the time of the dissolution of

the monasteries. The new wave of economic development which accompanied this growth differed fundamentally from its predecessor at the time of the Renaissance. It was centred on quantity rather than quality. The men of the North turned away from splendour and beauty to plenty and comfort. The change-over of mining from silver-bearing ore to coal—a fuel of which no civilisation until that time had ever made extensive use—symbolised the change. With coal for fuel, goods tended to be both cruder and cheaper than those made with charcoal as fuel. The substitution of coal for wood, by leading to a concentration of industry near the mines, encouraged the manufacture of cheap goods on a larger scale than had been practicable in the Middle Ages. Coal, which led to the invention of the steam engine in the eighteenth century to provide collieries with more powerful drainage machinery, led in the seventeenth to the building of railways with wooden rails several miles in length to cheapen the cost of carrying coal overland. Prof. J. U. Nef, the well-known authority on this period, has summed up the revolutionary changes which ensued in the following words: “The phenomenal growth in the volume of output in Great Britain, together with the development of industrial technology, changed the economic map of Europe. For rapidity of industrial progress there had been nothing quite like it anywhere on the Continent, even in the late fifteenth and early sixteenth centuries. There was to be nothing quite like it again in any country until well on in the eighteenth century. On the eve of the English Civil War, which broke out in 1642, England had come to produce at least three or four times as much coal as all the other States of Europe combined. She built more ships than any other country except Holland. Relative to her population, she produced a larger volume of iron, steel, copper and brass, of finished metal commodities, and of building material—such as bricks and lime—than any continental country. It was only in the making of wares that the very wealthy alone could afford to acquire—such as lace, silks and tapestries, and works of art modelled in glass, metal, clay and stone—that continental nations, France in particular, had retained and increased the advantage they had always had over the English.”

Foreigners who visited London in the reign of Charles I (1624–42) were astonished by the coal smoke belching from tens of thousands of domestic hearths and kitchen stoves and from hundreds of fur-

naces, kilns, and ovens in small factories and workshops. To them the city seemed hardly fit for human habitation, and there were plenty of Londoners who agreed with them! But in spite of many protests the factories grew in number, and before the outbreak of the Civil War London had taken her place as the leading industrial city of the world.

Unlike the earlier industrial expansion on the Continent, that of England under Elizabeth and the first two Stuarts started the system of large-scale enterprise controlled by private capitalists. The attempts of the English Crown to regulate industry and participate in it, to make mercantile subsidiary to political interest, after the fashion of most continental princes and kings, were decisively defeated in the struggles which culminated in the Civil War and the revolution of 1688.

But the full fruits of the new conception were not to be harvested until the nineteenth century, that is, after considerable delay. One cause of the slowing down in the rate of expansion of the volume of industrial production in the hundred years after the Civil War was the growing shortage of timber. Lumber was needed to construct hundreds of ships, to build the many new houses and barns in the newly laid-out parks, to supply the wants of the rapidly growing industrial villages and provincial towns, and especially of London which was sprawling almost daily further beyond the ancient city limits. For, in spite of the growing expansion of coal and iron, England was still living mainly in a timber age. Wood was used not only for the construction of the hundreds of small factories for making alum, saltpetre, copperas, salt, brass, lead and iron, but also for machinery—still made almost entirely of wood, except for the gears and axles—and, above all, as fuel both for domestic use and in the form of charcoal for smelting. No change in the appearance of the English countryside so struck the seasoned traveller, as he rode from county to county about the year 1600, as the havoc wrought in the fine forests which he remembered from the days of his youth.

What would have happened in Great Britain if, as in classical Greece and Italy, there had been practically no coal, can be judged from what actually happened to the output of iron. While coal was beginning to be successfully substituted for wood in most English manufactures by the middle of the seventeenth century, inventors

were unable to find a satisfactory method of using the new fuel in the smelting of ores. Many wagon-loads of wood continued to go up in smoke with the production of each ton of iron. As a result, a remarkable growth in the output of iron which began about 1540 was brought to an end, after the death of Shakespeare in 1616, by the scarcity and high price of wood fuel.

The plight of the English iron-making industry after about 1620 would have been the common plight of all English industries if there had been no coal to substitute for wood.¹ Without coal, industrial output generally could hardly have gone on increasing, and, as Professor Nef has suggested, "the early 'industrial revolution' might have been stillborn. The later world industrial revolution, to which the early expansion ultimately led, might never have taken place."²

What had made this new form of organisation possible? The answer is Spanish silver and gold; for "the important thing about these 'new' Elizabethan industries was that in all of them plant was set up involving investment far beyond the sums which groups of master-craftsmen could muster."

If it be permissible to regard the dissolution of the monasteries as marking the first major step in the release of the economic resources of England from the bondage of the mediaeval economy, then the remarkable increase in the quantity of money in Elizabeth's reign can be fairly described as the instrument which initiated the transfer of those resources to the builders of the new national economic system which was to succeed it. Those whose incomes were more or less fixed were seriously impoverished, while those who lived by current production for sale and commerce were enriched by the rise in prices that occurred.

What was the origin of this sudden expansion in the supply of money? The investigations of Professor E. J. Hamilton and others have left little room for doubt as to the correct answer. It was the

¹ In the eighteenth century the progress of industry caused a timber crisis in France and some other continental countries, comparable to the one which had beset Great Britain in the Elizabethan age. It may be recalled that it was a similar scarcity and dearth of timber that contributed to the economic collapse of the Roman Empire in the third century.

² J. U. Nef, *The Rise of Industrialism*: Charles R. Walgreen Foundation Lectures. See also his *Industry and Government in France and England 1540-1640*. I am greatly indebted to both books for the material used in this chapter.

flood of new silver and gold, which arrived in Europe as the result of the conquest and exploitation of Mexico, Bolivia and Peru by Spain at the beginning of the sixteenth century. This flood of new money set in flow a wave of inflation, which brought about such revolutionary price changes as entirely to disorganise the traditional economic system. The price-rise began in Spain about 1520, where it continued without serious interruption for the next eighty years, culminating, by the close of the century, in a price-level five times as high as that ruling when the century began. In England, the sensational rise of prices did not really get going until after 1550, and did not culminate until 1650, by which time prices were more than three times what they had been at the end of the fifteenth century.

Spoliation of the Spaniard, which had become a patriotic duty, was the principal method by which the new money was brought to this country. After one voyage alone (September 1580), the hold of Sir Francis Drake's *Golden Hind* is believed to have disgorged the colossal treasure of a million and a half sterling—between a quarter and a half of the whole annual produce of King Philip's American mines. As Lord Keynes has explained, "it was not the absolute value of the bullion brought into the country—perhaps not more than £2,000,000 or £3,000,000 from first to last—which mattered, but the *indirect* effect of this on profit and enterprise, the increment of the country's wealth in buildings and improvements being probably several times the above figures."

The reactions of different European countries to this flood of new money provide a convenient illustration of the rules which govern the adjustment of an economic system to sudden changes in its money supply. There are three possibilities. First, the system may refuse to allow its economic arrangements to be disturbed at all, in which case the extra money will simply be hoarded, as has been the case in the Native States of India almost from time immemorial, and as was largely being done in the United States through the instrumentality of the Federal Reserve Bank of America before the present war. Second, if those in charge decide to allow the money to be spent, there will occur a widespread transfer of real wealth, in the form of goods and services, from their present owners to the spenders of the new money. If the latter simply squander the money—that is, use it primarily to increase the scale of their personal consumption, it will

do the system as a whole more harm than good. Resources, which might otherwise have been used to increase the capital equipment and reorganise the productive resources of the country, will be wasted on current consumption. This is, in fact, what happened in Spain in the sixteenth century, when the ultimate effect of the acquisition by the *conquistadores* of the new gold and silver from the New World overseas was to ruin the country. There is a third way of using the new money, and that is to employ it to reorganise the structure of the economic system so that better use can be made of the productive resources of the country than before; for example, by substituting a larger-scale system of production for a smaller-scale system. Such a transformation will, of course, require a certain measure of price inflation to enable the founders of the new system to induce producers by the older methods to hand over the real resources needed to start the new regime—though not to the extent to which it occurred in this period. Lord Keynes seems to me to neglect this reorganisation aspect in his *Treatise on Money*.

It was because the new money that came to this country via Spain in the sixteenth century was used primarily to *reorganise* and expand our productive capacity and commercial wealth that Britain managed to escape the fate that befell Spain—not simply that the process of transferring these resources created windfall profits.

If some classes sank in the social scale under pressure of the rise in prices caused by the new money, others rose. The classes which benefited so long as prices soared were the new “commercial class:” landlords able to rack-rent their tenants, large-scale merchants, and the new type of farmer producing “cash” crops. Out of their profits they sank coal-pits, set up mills, mined alum and salt and supplied leather manufacturers with materials from their own tanyards. Refugees from France and the Netherlands were encouraged to develop new crafts in this country.

But the energies released by the new money were not confined to domestic enterprise. The closing years of Elizabeth’s reign saw the formation of a number of foreign trading Companies, such as the Levant Company and the East India Company. Attempts were even made to establish new settlements overseas, but these proved abortive.

Before the close of the reign, so great had been the strides made by

the application of capital to economic undertakings of all kinds on a scale unprecedented in history, that the grievances of society veered round from the miseries accompanying the dissolution of the old order to the vices incidental to the introduction of the new. Meantime, the rise in prices was affecting all classes from Sovereign to peasant. By making the revenues of the Crown inadequate, it was to be a leading cause of the subsequent struggle between King and Parliament. The Puritan revolution, besides its outward religious and constitutional aspects, had profound social and economic implications. The stern, self-confident individualism of the Puritans, built up on the religion of the Old Testament and an almost insane hatred of the Papacy, 'had a twofold objective: to shatter the existing order of society, and to achieve a new atomic society wherein personal rights and individual liberty would have free rein.

But though they may be said to have succeeded in both their objectives, it cannot be too strongly emphasised that, from the *economic* point of view, this "struggle for freedom" and drive for an atomic society—when viewed in retrospect—did not lead in the long run to the establishment of a greater measure of freedom for the ordinary individual, but to the erection, by a new industrial élite, of a larger and more embracing economic organisation, in which the ordinary individual, though he would be richer in material goods, would eventually have his personal liberty of economic action even more severely circumscribed than under its predecessor.

Although it was not appreciated immediately, the old social and economic structure had been breached beyond repair. It is true that vestiges have continued to survive, even to the present day; but revolutions are rarely complete. The wave when it breaks always leaves untouched eddies in its wake. The Guilds, already shaken by the Reformation, never recovered from the effects of the Civil War; enclosure continued to make headway and "new" industry and commerce to forge ahead. But there was a slowing down in tempo after the extravagances of Elizabeth's reign. The building of a fresh economic system, especially if it represents the creation of something entirely new, must, by its very nature, be a leap in the dark.

What brought about the slowing down? Two things mainly. In the first place, to establish a new system takes time. In the second place, if the system is to grow in size and maintain its stability, order

must be maintained between its various growing parts; if growth in one organ lags behind, then a check must be imposed on the growth of the others to give it time to catch up. The necessity for time is well shown by the abortive attempt of Sir Walter Raleigh, and others in Elizabeth's reign, to establish settlements overseas. They were in too much of a hurry; they could not wait for results.

Unfortunately, no satisfactory data exist about population under the early Stuarts. It is usually assumed that there were round about 4,000,000 inhabitants, and that the majority lived in the country in parishes with only a few hundred inhabitants. These figures suggest that a substantial growth in numbers occurred during Elizabeth's reign and, even if the increase shown by the figures is regarded as too high, there was unquestionably an increase of population pressure during the period. There was, accordingly, a state of congestion and acute land hunger in England at the beginning of the seventeenth century. There seems to have been a surplus population and, in particular, a growing landless class. In the first half of the seventeenth century, many thousands of English men and women were, accordingly, only too glad to take advantage of the opportunity for overseas settlement offered by the companies established by the private adventurers.

The establishment of a "two-way" traffic, by the settlement overseas of Englishmen with Englishmen's tastes and needs, was an essential stage in the process of building up the economic unit of international dimensions which was to be achieved in the nineteenth century. The inability to provide a satisfactory "two-way" traffic was a leading cause of the hold-up in starting trade exchange with overseas areas, particularly those populated by persons who either had no special need of goods at all, or if they had, whose tastes and standard of life were so far removed from those of Europe that contact, except on a limited scale, was impossible. England's export lines in those days were confined to textiles, with some lead and tin, together with coral from the Mediterranean. It proved impossible to sell enough of these articles in the East—the main overseas market in Tudor times—to pay for our imports from it. Part of our newly acquired bullion had, accordingly, to be exported to bridge this gap. Here is another example of the useful function that new gold or silver is able to perform by acting as a go-between.

Other leading obstacles to the rapid development of the new economic system were labour and the absence of satisfactory communications both at home and overseas. At home the launching of the "new idea" of industrialisation into a social and economic environment unprepared for it encountered formidable obstacles from the human factor. Time, experience and pressure were needed to accustom those who were to operate it to the change in traditional habits and outlook that it demanded. A change in outlook was required on the part of those engaged in agriculture as well as on the part of those engaged in industrial occupations. For it was from agriculture that the hands required to work the new industries would have to be obtained in the first place. England at the beginning of the seventeenth century was still, largely, an agricultural country and four-fifths of the population lived on the land.

Those who express surprise at the long time taken to establish our present economic system need to be reminded of the necessity of first providing certain essential prerequisites on the political side. A national economic system was impossible until political unity had been achieved. Not until 1707 was eventual union between England and Scotland consummated and Britain fitted to become the largest Free Trade area in Europe. It needed an atmosphere of relative freedom to enable the descendants of the Puritans to come into their own. Excluded from participation in politics until 1828, these non-conformists began to apply "a grave and intrepid energy to the pursuit of opulence. Labour they regarded as a sacrament, pleasure as a sin, the making of wealth as a sign that their service was acceptable to the Lord. Entering with a rugged determination into almost every form of industrial and commercial enterprise, but specially attracted to iron, they had a large share in the making of a new England, less tranquil and lovely, but richer, more powerful and vastly more crowded than the old."¹

As soon as these new industrial capitalists began to produce on a larger scale and for wider markets than the mediaeval local community, a further division of labour and degree of specialisation became inevitable. The craftsman under the older system had, as it were, filled in his own person five functions: workman, foreman (overseeing his journeymen and apprentices, if any), employer, middleman

¹ H. A. L. Fisher, *History of England*, p. 779.

or merchant and shopkeeper. Ultimately, subdivision of functions was to lead to these five functions being performed by different sets of individuals. This was done gradually. The first step in the new classification of industrial society into employers and employed was the separation of the functions of the artisan from those of the master.

At the bottom of the scale was the journeyman, who was to become the lifelong wage-earner. Next to him came the small merchant, or shopkeeper, who often continued to make with his own hands part of what he sold. Finally, there was the capitalist entrepreneur, who not only acted as the organiser of production, but also might be responsible for merchanting and selling to the ultimate consumer. The entrepreneur, who made an early appearance in the clothing trade, for example, might never have been engaged in any branch of cloth-making, but, nevertheless, might control all the stages through which the wool passed before it was ready for sale as cloth. He or his agents visited the local markets, bought up the wool, and distributed it among the cottagers, whose spinning-wheels turned it into yarn. The yarn was then collected and taken to weavers, who owned their own looms and wove it into cloth at piece rates.

When the new system first appeared, there was a curious reluctance on the part of the government to admit that there had come permanently into existence a labouring class dependent solely on wages, without any land at all from which to produce their daily bread. Perhaps the explanation is that outside the large towns there were relatively few labourers. With the decline in the clothing industry, a curious situation developed for a time: a shortage of labourers, coupled with an excess of artisans. This position was recognised in the laws governing wage assessments, which fixed a maximum wage for the ordinary labourer, with penalties for the employer who exceeded the established rate; but, for the textile artisan, there was a minimum wage, with liberty to the employer to pay as much more as he thought fit. While the excess textile artisans disappeared in course of time, the problem of securing additional wage-earners from agriculture for industry generally continued right down to the nineteenth century. Undoubtedly this was one of the main reasons why industry was unable to forge ahead in the latter part of the seventeenth century. The majority of men were then still engaged in getting their living as semi-independent producers of the goods

required for their own sustenance. Offers of work at money wages in occupations outside agriculture produced little or no response, except in and near the towns. As is still the case among the native populations of many of our own undeveloped colonies of to-day, working for wages in some occupation away from the family holding was so alien to the traditional way of living that few were prepared to consider moving, except under the pressure of dire distress or compulsory ejection from the family holding by enclosure or in some other way.

"The conditions of large parts of seventeenth-century England were, in fact, still semi-colonial. The result was that it was easy for the small man to get a holding; that wage labour, being scarce, was in a strong position; and that, since the largest group in rural society consisted, not of wage-earners but of peasant farmers, the critical issues of the day were those, not of wages but of land-tenure and credit."¹

Enclosure—which continued to meet with severe opposition—could do relatively little to relieve the situation. It might add to the landless proletariat, but it could not make up the deficiency in industry. Writing of conditions in the Midlands, Godfrey Davies observes: "Although industries were springing up round the fringes of this area—coal in Leicestershire, coal and iron in Staffordshire, salt in Worcestershire, and iron ware in Shropshire and in and around Birmingham—the absorption of labour was at first very small. And even when work was available, labour was immobile and shackled by the Poor Laws." The new industries were, accordingly, forced to rely largely either on labour imported from abroad or on forced labour, prisoners of war, criminals and the like.

Actually, since the population in an agricultural area tends to become adjusted to the number which the land will support, there is little doubt that, had there been any substantial migration of workers from the land to the factory, the pressure of agricultural interests would have led to measures being taken to prevent it. As it was, there were complaints of a considerable labour shortage in some areas in the latter part of the seventeenth century. Besides, though perhaps not as strictly enforced as they might have been, laws of settlement and removal continued to impose a barrier against the movement of

¹ R. H. Tawney, *Econ. Hist. Review*, VI, p. 48.

labour away from agriculture, down to the end of the eighteenth century. The only occasions on which an agricultural community can be persuaded voluntarily to acquiesce in a substantial outflow of labour from the land will be when a revolution in the system of farming results in such a "jump" in the output of food that there is not only ample to meet the needs of those engaged on the land but a substantial surplus for sale to the towns, and when fresh avenues of employment for those not wanted on the land are being simultaneously created in industry and commerce. For this twin revolution the country had to wait until the eighteenth century.

Another essential to progress on these lines, which was not provided until the eighteenth century, was a national system of communications. Making every allowance for the normal uneducated man's reluctance to move into the unknown, it would be unreasonable to expect any considerable migration to industry, especially among men with families, in the absence of suitable means of transport. Besides, if suitable means of communication are lacking, the news of a labour demand might take many months to circulate to a district where there was a surplus; to say nothing of the need to provide housing and other amenities for those migrating. One feels that a contemporary opponent of enclosure laid his finger on the spot when he said, "I complaine not of the inclosure in Kent or Essex where they have other trades and callings to maintaine their country by, or of places near the sea or city, but of inclosure in the inland countreys which take away tillage, the only trade general they have to live on."¹

The enclosure movement was a symptom of the change from a society still in the pioneer stage, in which each independent locality strove to be self-sufficient, to a national system, with its industries and their workers concentrated in towns. These towns, by providing an expanding market for agricultural produce, induced those on the land to increase their output to provide a surplus and by so doing set going an expanding cycle of exchange. The enclosure movement in the late eighteenth and early nineteenth centuries was a result of the industrial growth of England over a long period. Had industrialisation not taken place, it is possible that, given the improvements in medical science and the consequent fall in the death-rate, England and

¹ John Moore, *A Scripture Word against Inclosure*.

Wales might have developed in like fashion to twentieth-century Poland, parts of which, owing to the minute parcellation of the soil, have been reduced to a state no better than that of an agricultural slum.

The towns, gradually growing in size, became increasingly dependent for their sustenance upon an ever-widening circle of the surrounding country. The next stage was the linking up of these towns and their country areas, first by canals and roads, and later by railways, into a single national unit. The last stage of all was the expansion of this national unit into one of international dimensions.

What enabled this progressive enlargement in the scale of industry to get under way? The scanty evidence available does not permit of an assured answer being given to this question. But evidence is accumulating to suggest that the main original impulse came from the demand for industrial manufactures from the Colonies overseas. A recent student of Colonial history has gone so far as to venture the opinion that the Industrial Revolution itself was "directly, although not entirely, traceable to overseas factors."¹

This helps to explain how it was that when the Napoleonic Wars practically stopped our trade with Europe we were able to forge ahead and establish a lead in industrial evolution over the rest of the world which we held long afterwards. As Professor James Williamson² emphasises: "The blockade, carried out by virtue of sea-power, assured something approaching a monopoly of the ocean routes and so disorganised continental business that no imitation of British industrial methods could be attempted for a full generation." Before this wave of industrial expansion could get going, however, another economic transformation had first to be effected. There had to be a change-over in the centre of gravity of our national economic effort from commerce to industry.

At the beginning of the eighteenth century, England's domestic industries, while by no means backward, were still the handmaids of commerce. The greater part of the mercantile profit arose from the sale of goods obtained from without. As the century progressed the emphasis began to change. The pace of industry increased. To what was this acceleration to be attributed? Although historical research

¹ C. F. Mullett, *The British Empire*, p. 214.

² *The Ocean in British History*.

has not yet given its final verdict, there is much evidence to suggest that the quickening in tempo which is still termed the Industrial Revolution is to be regarded as one of the fruits of the overseas enterprises set going by Henry the Navigator and Columbus in the fifteenth century. The history of these overseas enterprises, which will be reviewed in the next chapter, gives some idea of how the wealth of England grew progressively as her entrepôt trade in overseas produce expanded. Here all that need be said is that the handling of many of these overseas raw materials was destined to undergo the same process of evolution as our own main domestic raw material of those days, wool. To begin with, long-distance commerce depended for its profit on the direct sale of overseas produce to European consumers, who used it where suitable as raw material for making manufactured goods. The next stage was that England herself began to process these materials and, notably in the case of cotton, convert them into manufactured goods which were then sold all over the world.

This change began at a time when, as economic historians are agreed, the oceanic trade was contributing more to the growth of our national wealth than did the more local commerce with the Continent of Europe. As a result, well before the nineteenth century opened, the rôles of industry and commerce had been reversed. At the onset of the Industrial Revolution Britain was importing rather more produce from the Atlantic Colonies and the East Indies than from Europe, but exporting nearly twice as much to trans-oceanic markets. There was a net favourable balance of nearly £3,000,000 a year, much of it able to provide capital for investment in British industry. The mid-eighteenth-century years saw the emergence, as new social phenomena, of mercantile millionaires who had made their money in overseas trade. From this period onwards the proportion of manufactured goods exported began to increase. A Parliamentary return of 1803, for example, stated that the year's exports amounted nominally to £33,000,000, of which £22,000,000 represented British manufactures. As the values taken were those fixed for customs purposes as far back as 1696, the real figure was nearer £40,000,000. The following figures for cotton illustrate how the English merchant gradually passed from acting as a middleman for the sale of tropical produce to the Continent to becoming a manufacturer of finished goods. At the beginning of the eighteenth century 450 tons of raw

cotton were imported in a year; by 1750 this amount had trebled; by 1780 it had trebled again. Then the really great increase began. By 1800 over 25,000 tons of raw cotton were being imported annually; by 1810, 60,000 tons, and so forward.

If it be true that new processes are not invented and new systems of production not organised until the need arises, there can surely be no great rashness in finding one of the main causes of the quickening in the tempo of the process of change-over from independent craftsmanship to factory work under capitalist control, which had been proceeding slowly for more than a hundred years, in the rapidly expanding demand for manufactured goods from colonial areas overseas whose trade and populations were increasing far more rapidly than those of the mother country. The demand came first for export; the home market was subsidiary and, as in the case of cotton, hampered by restrictions due to the competition of opposing local interests. Even those who are unprepared to admit that the crop of new mechanical inventions—the power-loom, the spinning-jenny, and the steam engine—which appeared at this time was a result rather than a cause of the acceleration in industrial activity, must at least agree that modern research has corrected the idea that there was anything sudden or unexpected about the Industrial Revolution, in the sense of involving a complete change of ideas and outlook at short notice.

Before passing to consider the stages by which this wave of uncontrolled new growth was to reach its end in the disasters of our own day, it may be helpful to emphasise the virtues—so generally ignored to-day—of the older system it swept away by contrasting the state of society in those days with the present world condition, more especially from the point of view of that essential prerequisite of any satisfactory form of economic society, namely, the maintenance of a proper balance between population and environment.

Despite considerable diversity the agricultural systems and towns of mediaeval times had two fundamental features in common: their primary aim was to provide for the needs of self-subsisting communities, money crops and money sales being a subordinate consideration until the calls of industry and commerce destroyed the stability of manorial agriculture; their second leading principle was conservation of the productiveness of the land, either by a system of

fallowing or some similar device, that is, relying on assisting nature rather than on their own efforts to conserve the fertility of the soil. Although these early systems had a low level of productivity they had only to cater for small populations and so were able to provide food and other necessities for indefinite periods and construct extraordinarily lasting social and economic communities. Plagues and other diseases were the main controllers of population growth.

The system which followed possessed none of these qualities of stability: its essence was fluidity. On the land, for example, it led to types of farming based primarily on the production of "cash crops" with entire disregard of the enduring needs or stability of the communities which grew them. There was a deliberate and aggressive substitution of man-made patterns and controls for those of nature. This was not immediately true of British agriculture, which by the substitution of a "four-course" rotation and unified holdings for the earlier "three-field" system and "strip" farming managed to establish for a time a new agricultural balance at a higher level, able to endure well on into the middle of the nineteenth century. Then the advent of the "cash crop" American prairie farms finally destroyed it by putting wheat on the market at prices well below those at which the British farmers could conceivably have grown it. Similar developments occurred in the production of butter, cheese, meat and other agricultural produce.

But, as we shall see presently, this new system broke down. This was largely because it made no attempt either to achieve a balance between population and environment or to provide with sufficient foresight for the recuperation of the soil and other stored-up resources of nature exploited by man. Over large sections of the fertile regions of the globe the texture of the soil was completely broken down so that it turned into dust and was blown away by the wind; soil erosion on a gigantic scale followed, with a host of social and economic problems. Much the same situation arose in connection with other important natural resources with the result that the law of diminishing returns is now operating despite the increasing use of machines to offset it. The uncontrolled speed of the machine completed the breakdown. To-day there is a strong move in the direction of a return, in the case of agriculture, to mixed farming and a more stable organisation of crop production and soil conservation and, in the case of industry,

to a less specialised, more self-contained and balanced pattern—that is, a reversion to the older principles. Problems due to unbalanced developments have begun to arise also in the less developed areas of the world, such as the Far East and Africa, where “cash cropping” of such tropical products as coffee, tea, oil, sugar and the like on large plantation estates run by cheap native labour has displaced native food-crop production; subsistence agriculture has been destroyed to make place for plantation cropping, the natives receiving money instead of food for their work. This substitution of money for food has led increasingly to problems of over-population, malnutrition and social unrest. Besides, new inventions and changes in world needs have frequently rendered the produce of whole regions of this type more or less superfluous or uneconomic, causing great financial loss and severe human distress to those directly concerned. But even in regions where less drastic changes have been made in the economic environment, modern man’s technical knowledge and appliances have been used to cause serious disequilibria. The reduction by medical and veterinary science of the incidence of human and animal diseases, thereby removing one of the most important natural checks on population growth, has resulted in unlooked-for increases in the number of men and animals which have put great pressure on the land and on the towns. To sum up in the words of Sir John Russell: “The intensive specialisation which followed the too exclusive emphasis on efficiency of production had two great defects: it lacked the permanency of the older system and it did not adequately provide for the needs of the community.”

Nevertheless, as we shall see in the following chapters, for a time it brought happiness, hope and the vision of great plenty to millions.

CHAPTER X

THE GREAT MIGRATIONS

The experience of the past four hundred years has confirmed the existence of a close connection between rates of natural population increase and migration. It is the countries with rising rates of increase that have exported populations; a fall in the rate has regularly preceded a dwindling of migration. Many experts on population growth, perhaps the majority, hold that a rapid rate of natural increase tends, of itself, to operate as a "push" of considerable effectiveness, by creating pressure on the opportunities of employment and upon the standard of living. Conversely, the existence overseas of a new world, with unlimited opportunities for acquiring wealth, would, by arousing envy, exert a strong "pull" on the people of a poor and overcrowded area—provided adequate transport facilities were available. It is, accordingly, not surprising that during the two most important periods in the history of Britain, when emigration was active, there existed, in addition to such migration-promoting factors as religious persecution, a relatively severe state of over-population. The first was in late Elizabethan and early Stuart times when, according to the pamphleteers of the period, England was congested by a swarm of "lewd and naughty fellows, consumed by pestilence and penury." The conviction that Britain was a kingdom "pestered with inhabitants" persisted until the middle of the seventeenth century. These years were of decisive importance in our economic history, for in them British enterprise and emigration laid the foundations of the United States of America.

By the close of the century the cry had changed, and, during most of the eighteenth, there was an active campaign against emigration. Populations had become "riches which should be kept at home." Not only were they required to act as a defence against the common enemy, but the industrial and agricultural revolutions at home were creating jobs faster than men could be found to fill them.

A variety of circumstances was responsible for the condition of over-population which emerged in the latter part of the sixteenth

century. The dissolution of the Monasteries, the enclosure of land, the closing by war of the normal channels of trade with Europe, the rise in prices caused by the flow of American silver into Europe, religious unsettlement and the general breakdown of existing social and economic relations had combined to create a condition of poverty and discontent. But the idea of relieving social distress by emigrating to the Atlantic coast of North America did not take immediate root in men's minds. To begin with, emigration of the population that could no longer be supported at home was impossible. Spain and Portugal held a monopoly of Atlantic enterprise and offered vigorous resistance to all intruders.

Within fifty years of Columbus the sovereignty of Spain had been established over an area of 8,000,000 square miles from Guatemala to Chile. This dominion, with the exception of the West Indies and North America, subsequently lost to the English, lasted roughly three centuries, from 1521 to 1821. During this period most of Latin America (except Brazil which belonged to Portugal) remained a feudal appendage to Spain. Not until Elizabeth had successfully challenged the Spanish and Portuguese monopoly of the Atlantic coast in Africa, the Caribbean and North America, and Hawkins and Drake had created an ocean-going navy with a new type of armament, capable of fighting thousands of miles from home, was the way clear both for the development of an expanding British export trade and the export of emigrants. Even so this opening was not exploited for a full fifty years.

Those who are accustomed to the high-speed movements of the present day are apt to overlook the numerous and complex obstacles that had to be overcome before the Atlantic could be bridged. How many Englishmen of to-day are aware, for example, that the cult of the map and flag was unknown to the Englishman of Tudor times? Neither the fabled wealth of Cathay nor the epoch-making geographical discoveries of continental navigators could tempt him to leave his seagirt isle. "It was trading and buccaneering, rather than the lure of the unknown, or the thirst for knowledge, or the vision of empire, that gave birth to the greatest period of English exploitation of the sea," observes Professor J. B. Black. Again, before there could be actual emigration, the pressure of population congestion in England had to reach such a pitch that the misery at home would

outweigh the perils of adventuring over a strange sea to still stranger foreign lands. This did not happen until Stuart times.

Meantime England's first essays in overseas commerce took the form of a search for new trades and markets in less hazardous regions. The first project launched in the search for economic salvation overseas was the Muscovy Company, chartered by the Crown and financed by London merchants, which attempted to provide markets for the starving English craftsmen along the north coast of Asia. Next, these same promoters with the connivance of the British Navy began to adventure into the Atlantic and to open up trade with Africa, despite the protests of the Portuguese. Elizabeth legalised trade with Africa shortly after her accession to the throne, and by 1569 a state of actual, but undeclared, war existed with Portugal. By 1585 England was involved in war with Spain as well. Britain was driven to adopt this course because no other alternative was open to her. It was no good looking for markets for her goods in the East where, in the course of the sixteenth century, the Portuguese had succeeded in developing a lucrative trade in spices; for relief required that a market should be created for England's principal export, English cloth; and woollen cloth could find its market only in cold and temperate climates. Besides, at this time, England had neither enough capital nor large enough ships to make it profitable to embark on a voyage of 16,000 miles on the sole chance of pulling off a profitable deal in spices. It was not until the close of that century that English merchants had learned with Hesiod to say, "Praise a little ship, but put your goods in a big ship," and begun to build ships of over two-hundred tons.

All things considered, therefore, it is not surprising that it was not until the early Stuarts that the way was ready for a large-scale migration of Englishmen across the Atlantic. Once that migration of peoples began, however, there was nothing half-hearted about it. There was no need for State action. "It was a spontaneous outburst of national energy, a swarming-off of people such as had never occurred before and has since occurred only once, in the early and middle nineteenth century. . . . The unprecedented feature lay in the solid waves of man-power that swept across the Atlantic, and in a generation founded a dozen colonies so securely that in every one of them the parent stock preponderates to this day, and its language,

policies, laws and religions have imposed themselves on all subsequent immigrants.”¹

Historians are accustomed to make much of the distinctions between the Puritan colonies and the Anglican colonies, the colonies under chartered companies, and those under a Lord Protector, but in truth these distinctions concerned only the leaders. “To the common man the governing motive was hunger for land anywhere, in any climate, under any religion.” With that purpose he emigrated, in his hundreds up to 1625, in his thousands and ten thousands until about 1640. By then all the good unoccupied land within the reach of shipping was everywhere taken up, so that the attractiveness of emigration to the landless Englishman vanished. The movement came to a halt. It was resumed in Charles II’s reign when the estuary of the Delaware River was discovered to carry the navigable water far into the interior of America. Even so, by the time William Penn in 1681 founded Pennsylvania, the first colony without a coastline on the open ocean, the pressure to migrate had died down from the English side. Willing emigrants no longer came out from England. Penn’s Quakers were not free emigrants; they had been driven out by persecution. They were few in number, and for population Pennsylvania had to rely largely on German and Swiss peasants seized with the same land hunger as had driven the English overseas half a century before. Henceforward, the only migration from England was the enforced migration of undesirables: prisoners of war, reprieved criminals, prostitutes swept up from the London streets, and unlucky children kidnapped by crimps. As all these expedients were insufficient for the labour needs of the plantations of the West Indies and South Carolina, resort was had to the negro slave. In 1672 the Royal African Company was founded and became the recognised channel for the sale of slaves to the plantations.

Meantime, as a result of the resumption of initiative in Atlantic enterprise by the English Government, trade, as distinct from emigration, had continued to make headway. By the reign of Charles II, the Commonwealth policy of excluding the Dutch from colonial trade by the passing of its two Navigation Acts was completed and English colonial trade converted into a monopoly. By the Navigation Acts the colonial trade was prohibited to all foreign ships unless

¹ James Williamson, *The Ocean in English History*.

under the sanction of a special British Order in Council. By this time, in the more northerly American colonies, "a new English stock had been founded, a colonial population much more prolific than the old nation and able to expand thenceforward by its own fecundity."¹ This development provides an illuminating example of the effect on a human population of transference from a congested environment to one where free growth is possible. This New England came, in course of time, to produce a surplus of its own eager for new homes. But these new emigrants no longer considered themselves Englishmen, but Americans. As Americans, they preferred to migrate within America. It was this population increase that, at a later date, was to help to provide the vast new market for British exports which not only helped to replace the dying markets of Europe, but induced that major change in English manufacturing methods usually referred to as the "Industrial Revolution."

Taking America and the West Indies together, there were probably not more than 350,000 inhabitants, including negroes, in the Atlantic possessions in 1688. The population of England and Wales at that time was about $5\frac{1}{2}$ millions, so that our colonial population was roughly one-fifteenth of that of the mother country. It possessed an extremely low standard of living.² By 1760 the colonial population had risen to 2 millions, while that of England and Wales was certainly no more than 7 millions—the proportion had thus risen to one-third! The American population was now doubling itself once in twenty years. Moreover, the colonists were becoming more luxurious and consuming more manufactured goods per head. It is true that the English monopoly of supplying that growing population was lost in the War of Independence, but a goodly share remained.

From the point of view of creating stable economic patterns, it is clear that two types of colonies need to be carefully distinguished: *commercial* colonies and *settlement* colonies. Broadly speaking, commercial colonies were overseas areas devoted to producing surpluses of goods *complementary* or *supplementary* to those made in the home country; settlement colonies were basically self-subsisting overseas areas—replicas of the home country—which in due time were destined to produce surpluses in the same categories of products

¹ James Williamson, *loc. cit.*

² See *Camb. Hist. British Empire*, Vol. I, p. 267.

as those made in the mother country, i.e. competitive goods. The first British overseas commercial colonies, or the Caribbean colonies as they are sometimes called, were captured from the Spanish and Portuguese adventurers who had come to Latin America not to settle on the continent but to loot it. They had come not to get away from Europe but to return to Europe wealthy. They had come to found colonies to attach to the Old World, not to establish a New World. There was all the difference between these colonies and those founded in North America by the English Pilgrim Fathers who migrated to America as settlers, to stay to create a new civilisation based on Puritan values—literally to build a *new* world. They were cutting loose from England for ever. They went to build a new and better England, and before long the merchants and traders of Boston were competing with those of London, and were looked upon by them as rivals only less dangerous than the Dutch. There were also plantation colonies being founded about this time.

It is not surprising that in the course of years these two sets of colonies came to be known respectively as the bad colonies and the good colonies. The West Indies were good colonies. They were of the plantation type which people farmed, not directly for their own subsistence, but to produce surpluses of goods complementary to those of Europe, to which they could—at least in the early days—be sold on terms highly profitable to those who handled them. The demand of these colonies for manufactures stimulated British trade at home and so helped to relieve unemployment, in addition to making a highly valuable contribution to the national earnings in the form of re-exports. As they made only a small call on the home country for immigrants they were able to fit perfectly into the general pattern of English trade even after the wave of migration was over.

But it would be a mistake to imagine that all was to remain plain sailing, even in the case of these commercial colonies. They were largely “one crop” plantations and, as we know to our bitter cost to-day, “one crop” farming, unless checked in time by exhaustion of the soil or some equivalent factor, is apt to lead to over-production—that is, too quick production. Tobacco was the chief pioneer crop, and, by 1636, European markets were so flooded with tobacco that prices barely yielded a living to the planters. Their holdings then passed into the hands of the merchant shippers to whom they had

progressively mortgaged their estates to pay for their import needs of food, clothing and various luxuries from England. Next, these merchant-capitalists in their turn started a new type of profitable plantation crop—sugar. This type of crop, it is interesting to observe, would probably not have been practicable had those islands continued to be farmed on a small-plantation basis by white labour. Sugar not only requires costly machinery, plant and transport, but labour organised in gangs. These plantations were able to render a specially valuable service to English shipping, for they provided the principal Empire market for African negroes and so became the centre of a triangular system of navigation between Great Britain, Africa, and America. Thus they fitted perfectly into the general pattern of the English trade of that period.

It is true that the idea which had inspired the earlier commercial ventures in the Atlantic, that the natives of the West Indies would prove large purchasers of English cloth, had failed to materialise. But this had been more than made up by these colonies becoming sources of supply of goods which England herself could not produce and which she could not only sell in her home market, but, better still, could use as exports to pay for her import needs from Europe. England at that time was being compelled to use part of her stock of gold and silver to purchase naval stores, and wines, linens, silks and other luxuries from Europe, and according to the economic ideas of the day it was held that every such purchase drained away the national wealth. To-day, when a succeeding age of expansion is drawing to a close, we are beginning to look at seventeenth-century economic ideas with less jaundiced eyes.

The complete contradiction between seventeenth-century and nineteenth-century ideas would appear to imply that one or other was radically unsound. Much has been written against the policy of the Navigation Acts. "It has been the work of the less abstract and more historically minded economists of the past half-century," says Professor James Williamson, "to resolve the contradiction by drawing attention to the change of circumstance between one period and the other. The immense *industrial* energy of the nineteenth century rendered production the chief employment of England, and unimpeded disposal, without restriction of its channels, imperative. But in the seventeenth and eighteenth centuries English production

was not supreme over that of other countries, and its own strength was not sufficient to attract the flow of raw materials." The various forms of bilateral trading adopted by Germany in our own time represent a more up-to-date—and flexible—method of dealing with a situation which basically is not very dissimilar to that which obtained at the end of the seventeenth century.¹

In any case, artificial canalisation of supply had much to be said for it at a time when the warlike policies of the times and the close connection between the mercantile and fighting navies made the deliberate encouragement of shipping a necessity. In other words, while free trade might have suited the individual it would have been bad for the nation. Summing up the position, Williamson concludes: "It is probably true that the industrial supremacy of nineteenth-century England could never have come into being without the antecedent supremacy of the navy that won Trafalgar. Recent historians concede with Adam Smith that that wonderful navy was the child of the Navigation Acts."

Thus far little has been said about another set of commercial colonies destined to play an even more important part in shaping the industrial and commercial future of England and in preparing the way for the nineteenth-century wave of industrial expansion, that is to say, India and her dependencies. Until the Restoration, the English East India trade remained in an experimental condition. There were economic as well as political reasons for this. The spice regions, as has already been mentioned, offered no market for our principal export, English woollen cloth, so that payment had to be made in silver, and this raised a popular outcry whenever there was a depression in trade, on the ground that wealth was being drained away from England. Another difficulty arose from the fact that, as in the case of tobacco from the West Indies, the market for spices was not unlimited. It was impossible for the spice trade to continue to expand and also to continue to yield a high profit. It was for this reason that the Dutch fought the British for a monopoly in the seventeenth century.

¹ "It is worth noting, in view of the continuous misstatements in this connection, that the volume of Nazi foreign trade, in spite of bitter determination for military reasons to achieve self-sufficiency, increased in real terms more between 1933 and 1938 than that of either Britain or the United States." (T. Balogh, *Institute of Statistics*, Bulletin Vol. V, Supp. No. 5.)

Finding that the spice trade held no great prospects, the East India Company turned its attention to the mainland in its search for new trades capable of expansion. It found them in three classes of goods for which Europe was able to provide an almost unlimited market for many years to come. These were cotton cloth of various kinds—chintzes, calicoes and muslins, both plain and printed—indigo, and saltpetre, the basis of gunpowder. These products considerably strengthened England's position by enabling her to sell goods to her neighbours in Europe in payment for what she had previously been buying from them largely for cash. In England, the sale of Indian cotton, which was much cheaper than the more expensive home-produced linen, contributed to the social equalisation of modern times by allowing the poor to acquire the habit of cleanliness of the rich. Indian cotton goods continued to play one of the leading rôles in our national economy until the early years of the nineteenth century saw the process suddenly reversed by the machine looms of Lancashire underselling the Indian hand-weaver in his own country. Yet another century has passed, and we have the process once again reversed by the machine-made cottons of India underselling those of Lancashire.

In view of the undoubted benefits enjoyed by England from her possession of *commercial* colonies, it is not surprising to find that in the earlier years their virtues in almost every particular were contrasted with the vices of the North American mainland *settlement* colonies in the temperate zone. These mainland colonies contributed little to the home country except a small trickle of naval stores; they produced no staple commodity for re-export; they consumed, during the first hundred years or so of their existence, fewer English manufactures than the West Indies. To this they added later the vice of drawing away, whenever they could, population from the motherland. To crown all, they evinced a desire to produce manufactures of their own.

Not only was their trade development not kept complementary to that of Britain, but "these Northerners produced surpluses for which the Imperial market was too small. Ruin faced them unless they could find markets outside the Empire." That was the rock on which the first British economic empire came to grief. If that British Empire could have enlarged its markets rapidly enough for temperate-zone

products, the outcome *might* have been different. But growth was too slow and unevenly distributed. America's population was doubling every two decades and her productive power was increasing more than correspondingly. It was contrary to common-sense to expect the rate of productive power to be scaled down to conform to the much slower rate of the then almost self-sufficient system of the United Kingdom and its dependencies.¹ A rapid expansion of industrial manufacture in England was not a possibility until after she had made industry instead of commerce her main preoccupation, an evolutionary development which in turn could not be brought to fruition until *after* the markets of the Atlantic colonies had reached a particular stage—and "seale"—in their own evolutionary progress. Production could not continue to grow unless consumption grew also, and vice versa.

The cause of the difference in rates of economic growth between England and America, it should be stressed, was primarily a difference of natural conditions, not of economic theory. Plenty of cheap, rich, virgin land crying out for people to exploit it, on the one hand, contrasted with a long battle against population pressure and soil exhaustion on the other. But as we shall see presently, the way out of this impasse was not simply to remove all restrictions on emigration and the flow of goods between the Old World and the New. To operate effectively as parts of a single economic pattern, some means had first to be devised of ensuring that appropriate ratios were maintained between the respective speeds of growth not only of agriculture and industry in the two areas, but also of their populations. Most important of all, there was need of some form of mutual understanding that neither area would infringe the section of economic "territory" assigned to the other. In plain language, the New World would have had to agree to concentrate on agriculture and certain ex-

¹ That it was the incompatibility of yoking together two systems with such violently contrasting rates of growth, and not any fundamental unsoundness in the British mercantile system, that led to the breach has been made clear by a number of recent writers on the period. See especially Professor Hancock, *Survey of British Commonwealth Affairs*, Vol. II, Pt. I—to which I am greatly indebted for many of the facts and ideas in this and the next two chapters. He writes, "Professor G. L. Beer, thirty years ago, revealed the ideally reciprocal nature of the British mercantile Imperial policy, thereby destroying for ever the notion of it as a quite gratuitous offence against Americans and against reason." (Footnote p. 40.)

tractive industries, leaving the Old to cover industrial manufacture, no alteration in this division of labour being made without a mutually agreed arrangement for a redistribution of activities for the common good of the "whole." As it was, political strife followed by open warfare brought about the break-up of this first British economic empire of settlement.

The first decades of the nineteenth century saw the birth of the second British economic empire of settlement and the commencement of a second wave of overseas migration. During the period of economic chaos which followed the Napoleonic Wars, overpopulation, particularly in the sense of under-employment, was rife in England. Faith in emigration revived. After 1825 "the opinion grew that the United Kingdom's surplus of people—which even during the war had begun to send a trickle to the United States and Canada—should as far as possible be sent overseas. . . . From now onwards, the governing classes were convinced that emigration was at least a safety-valve and it might even stave off impending catastrophe."¹ The problem became: How to get this redundant population on the move out of Great Britain? Until railways had been invented and built and communication with areas overseas provided by steamship, the movement could only proceed slowly. Besides, the provision of these necessary instruments of communication must of itself slow up the outflow, by producing for a time rapidly expanding avenues of employment at home. Nevertheless, these years saw the germination of the ideas which, later, were to lead to steps being taken to "build a bridge" between England and the New World over which the inhabitants of the congested and relatively poverty-stricken areas of England were in due time to pass to enjoy the ample opportunities of virgin areas, not only in America, but also in Australia, New Zealand and Canada. This new Empire of Settlement, which took the place of that lost in North America in the previous century, continued to flourish and expand until our own time.

Migration, capital investment and the export of goods were three inseparable elements in this *single* process of "group" economic development. If adequate statistics for the quantitative movements and rates of growth of all three were available, we might chart pic-

¹ Professor Hancock, *loc. cit.*, p. 17.

torially the consecutive stages in the transformation of Britain from a national to an international economic power. Before this enlargement could get under way, obstacles to international movement of all three elements had to be removed. The first stage was the Repealing Act of 1824, by which restrictions on emigration were removed; thenceforward, until the twentieth century, when congestion began to compel the recipient countries to impose restrictions on immigration, there was free trade in humanity. In its early days, the outflow of migrants was slow and sporadic. While many skilled artisans took advantage of the permission to emigrate freely, in other cases emigration was the result of what the colonies resentfully termed "pauper-shovelling." During the depression years of 1820-1840, for example, English landlords pressed for emigration to relieve their overcrowded estates; industrialists saw in it a remedy for unemployment; while the Government used it as an alternative to Poor Law Relief and as a means of ridding the home country of undesirable and troublesome characters. The situation was confused by a substantial amount of internal migration of population within the United Kingdom itself, following the realignment of agriculture and industry to form the new British *national* group economic pattern. In particular, Ireland and Scotland—countries which, in this period, had growing agricultural populations—sent many migrants to industry. Overseas emigration, accordingly, made comparatively slow headway. Meantime, the idea that overseas settlement might be made part of a common plan of orderly "international" development, of benefit to all concerned, was gaining an increasing number of adherents.

The second landmark in the process of enlarging Britain's national unit was the establishment of free trade in goods in the 'forties; the third, the removal of the restrictions on the export of machinery and coal. These, together with railway engines and track material, were to be an outstanding feature of British export trade for the remainder of the century. The succeeding years witnessed the mobilisation, on a large scale, of Britain's surplus capital resources to endow the central and western regions of the United States with their "permanent outfit."

In the 1900's came a change and the tide, which since 1850 had flowed into the United States, veered to Canada. Migration into

Canada rose from 49,000 in 1901 to 402,000 in 1913. "*Laissez-faire* in humanity enjoyed the last ten years of its reign." Thereafter, the flow of men, capital and goods overseas began to slacken. By the nineteen-twenties, the opportunities of expansion were closing in Canada, as they had already closed in the United States. But in the other Dominions—notably in Australasia—the opportunities for capital investment, though not for migration, were still good. By 1929, however, this outlet had been filled also. The period of expansion everywhere was definitely at an end.

Meantime, these enlargements of economic opportunity had released a wave of population growth of staggering dimensions. The world had experienced the greatest migrations of mankind since the Ice Age. This vast outpouring of people represented a fraction only of Europe's contribution to the increase of the world's population made possible by man's increasing power over nature. Over the last hundred years, it is estimated that the population of the globe has grown five times as much as in the preceding thousand. Europe has called into productive activity the resources of the New World. By transferring thither its own intelligence, strength and enterprise, it has created a world-wide uniformity of pattern in the material activity of life by shifting from continent to continent products and techniques which once were localised. Europe's acquisitive society sought first the mineral wealth of the New World; it has always sought gold and silver and precious stones; in our own day it seeks oil also. A strong influence in sustaining, if not in stimulating, the migration of men has been the induced migration of economic animals and plants fostered by man himself. The white men brought sugar-cane to the West Indies, and a slave population with it; they brought back the potato from America to sustain the peasant increase of their own continent. By their wool, they set in motion the people of Australia; by their wheat, they peopled the prairies. This was the climax.

"The great migrations of the last century everywhere have been into the grasslands, first into the humid and park lands, then into sub-humid lands. The story begins with Russia. It reaches its greatest sweep in the United States. It is continued in Argentina, in Western Canada, in Australia. . . . It ends . . . in the Canadian North-West and the plains of Manchuria and Mongolia."¹

¹ Carl D. Sauer, *Limits of Land Settlement*, p 15.

Before we pass to consider the effect of this closing of the expanding frontiers of the world and the end of this great age of world migration, we must see what had been happening meantime in Britain, whence the wave of international expansion acquired its first impulse.

CHAPTER XI

THE AGE OF INDUSTRIAL EXPANSION

In the process of achieving a unit of international dimensions Britain's economic evolution can be said to have passed through three main discontinuous stages:—

1. The removal of *local* barriers imposed by localities themselves, in their own interests, to check the movement of produce and people in and out of their small local areas.

2. The removal of *national* restrictions on movements between localities—imposed by the national government in the interest of national political stability—to control internal trade and exchange in agricultural produce such as wool and corn, to prevent the unrestricted exploitation of processes of domestic manufacture, and to restrict the free internal migration of agricultural and industrial personnel.

3. The removal of *international* barriers to the free flow of goods, money and people between Britain and countries overseas.

The first stage was the mediaeval system based on small local communities. The second stage, which lasted broadly from the first quarter of the eighteenth century to the middle forties of the nineteenth, may be summarised as the formation out of the various *local* agricultural and industrial systems dotted over the countryside of a single *national* pattern by a system of transport links provided first by river and canal and then by the road and, finally, by the railway. This enabled the scattered local "surpluses" of industrial and agricultural products, and also of labour, to be assembled and distributed on a nation-wide scale for the benefit of the national group as a whole. The cheapening of prices which resulted from this increase in the "scale" of manufacturing operations and the size of the market gave a marked acceleration to multiplicative growth in many new directions.

The third stage, which did not really come into operation until after the eighteen-fifties and reach its zenith until just before the outbreak of the first World War of 1914–18, may be described as the conversion of that *national* system into an *international* system by

transferring, with the help of the railway plus the steamship, the bulk of the agricultural part of our national group pattern to virgin areas in the New World overseas, where there was an abundance of good land to be obtained practically for the asking, leaving the mother country to concentrate on expanding and specialising in industrial manufacture.

More must not be read into the above descriptive summary of events than is intended. There was by no means always a hard and fast separation of the various phases in this process of change, either in time or space, nor were any of these transformations deliberately intended or planned for in advance; they just happened as a result of the play of natural forces under the stimulus of new discoveries and population growth.

The word "international" is used here in the special sense of meaning the substitution of a system of division and specialisation of work on an international basis for one confined to the narrower circle of the national boundaries of the United Kingdom. In one sense, as we saw in the last chapter, Britain's economic system was already an international one, as extremely elaborate arrangements for exchanging goods with areas overseas had already been established in the course of the centuries which had elapsed since contact had first been made with Africa and America in Elizabethan times. But that interchange had not involved any structural alteration of Britain's own *domestic* economic pattern. She had remained a self-supporting national entity in basic essentials. The additions made to her foreign trade had consisted mainly of dealings in gold, silver, slaves and overseas luxuries, i.e. non-essentials. The difference between this type of "international" system and that which emerged in the second half of the nineteenth century was that, in the latter case, the overseas areas took over the production of certain essential basic commodities previously made by Britain in her home territory—that is to say, Britain's existing self-sufficing economic pattern was broken up and redistributed over a larger geographical area than before. It was an international subdivision based on re-settlement, as opposed to the international subdivision of the seventeenth and eighteenth centuries which had been based mainly on commerce.

Before such a revolutionary transformation could be effected, two discontinuous structural changes were necessary: first, steps had to

be taken, as we saw, to break down and then re-combine in a new way Britain's scattered local centres of production to form an enlarged unit of national dimensions; and, second, having done this, means had to be devised of breaking up, in turn, this national structure and redistributing its population and economic activities over a still wider area, including this time new territories overseas.

While the respective waves of new growth, set in train by each of these reconstructions and enlargements of the British economic pattern, were the result of quite separate and distinct sets of impulses, there was a good deal of overlapping; in particular, the second wave got under way in agriculture long before the first had reached the end of its flow in industry. This is, perhaps, not surprising, for innovation and invention in industry were, relatively speaking, still in the infant stage, whereas the agricultural methods and farming practices of the home country were so mature that they could largely be transported and applied as they stood in the overseas countries.

Industrial technique was in a phase of rapid evolution and elaboration when the second enlargement occurred. Unlike agriculture, the expansion of the market for industrial products at that time depended not merely on creating larger-scale models of existing methods and units of manufacture, but also on evolving entirely new types of units and new methods of subdividing and specialising the processes of production to enable goods to be produced more quickly and so more cheaply. Thus new markets for industrial products were created, not so much by increasing the land area devoted to industrial manufacture as by the application of a number of revolutionary cost-reducing inventions to the actual processes of industrial manufacture and transport. The most notable of these inventions was the application of coal to produce steam for use, first, to drive machines for producing industrial manufactures, and, later, to operate the railway and steamship to effect a revolution in the cost of transporting them also. Thenceforward, goods could be placed on the market so much more quickly and more cheaply than before that at one and the same time the purchasing power of the average consumer's income could be progressively expanded to a degree hitherto deemed impossible and an ever-increasing number of profitable means of employment provided for an ever-expanding number of people. It is true that this increase in purchasing power did not become available equally to all

sections of the community at the same time. It spread slowly and spasmodically.

The first of these two waves of enlargement, which lasted roughly from 1750 to 1840, covered broadly the internal changes in the industrial section of Britain's economic pattern, usually referred to collectively as the Industrial Revolution.

To suggest that what then occurred was something unique and entirely unexpected, which suddenly burst unheralded on the world, is, as has already been observed, misleading. Not only was it preceded and succeeded by equally momentous changes, but, as we saw in a previous chapter, it was only a blossoming forth of young growth which had slowly but steadily been making headway for many decades. It was a period of general structural reorganisation not only in industry and commerce but also in agriculture. Between 1780 and 1810 nearly 1,700 Enclosure Acts were passed, followed by the adoption of intensive methods of cultivation in the neighbourhood of the towns and better ways of raising cattle. The war prices of the Napoleonic War period gave such an added fillip to the movement as to lead to an untenable increase in acreage; about 5 million acres were added to the food-producing area during this period. Prices fell after the war. Foreign competition increased. Adjustment ultimately took the form of cutting down the less productive acreage and the migration of the agricultural labour thereby released to industry and overseas countries. The supply of labour had, in any case, already been enormously augmented by the increase of population which accompanied the improvement of agriculture and a stream of expanding opportunities of employment in industry in the second half of the eighteenth century.

The Industrial Revolution breached the dam which, until that time, had been holding back population growth. Where before there had been a mere trickle, there now appeared a flood. By the first quarter of the nineteenth century, that flood was out of control. Most of the miseries which afflicted industrial Britain in the thirties and forties of the nineteenth century were the result of this unexpected and prodigious rate of flow of population into the industrial towns. It is easy to be wise after the event, but it is ungenerous for a generation, which has not yet succeeded in solving for itself the delicate problem of adjusting population to housing accommodation,

to condemn the Englishmen of this earlier period for their shortcomings in regard to health and housing. The problems of large-scale town-planning had not yet been conceived. Not even the most far-sighted could foresee the advent of the gigantic conurbations of the present day.

Let us look at a few figures. Population data for the period before 1801, when the first census was published, are very scanty. In 1700, the population of England and Wales stood at somewhere round the 6,000,000 mark; in 1750 it was almost certainly still below 6,500,000, an increase of less than 2 per cent per decade over a period of fifty years. At the first census, in 1801, the figure was 8,893,000, a growth of nearly 40 per cent, that is, of the order of 8 per cent per decade for the second half of the eighteenth century. The periods of most rapid growth are believed to have been the central decades of the century and, later, from about 1780 to somewhere between 1811 and 1821. The census figures of England and Wales for the years 1801 onwards were as follows:—

Year	Population	Increase of Population since preceeding Census
1801	8,892,536	—
1811	10,164,256	1,271,720
1821	12,000,236	1,835,980
1831	13,896,797	1,896,561
1841	15,914,148	2,017,351
1851	17,927,609	2,013,461
1861	20,066,224	2,138,615
1871	22,712,266	2,646,042
1881	25,974,439	3,262,173
1891	29,002,525	3,028,086
1901	32,527,843	3,525,318
1911	36,070,492	3,542,649
1921	37,886,699	1,816,207
1931	39,947,931	2,061,232
1941 ¹	41,620,000	1,672,069

The causes of the increase of population from under 9,000,000 in 1801 to nearly 14,000,000 in 1831 were not clear to contemporaries. The employment of children in cotton mills—making them a sub-

¹ Estimate.

stantial paying asset—and the system of poor relief to agricultural labourers, which made a family an essential source of income, were only partly responsible. Besides, the number of births per thousand of the population, though greater than in the first half of the eighteenth century, appears to have fallen a little after the decade 1780–90; another fall took place after 1830. It is estimated that, in 1780, it stood at 37·7; in 1831–41 at 36·6. Between 1841 and 1851 it dropped sharply to 33·9.

There is no mystery, however, about the immediate cause of the rise in population. In 1740, seventy-five out of every hundred children died at birth or before their sixth year; by the beginning of the nineteenth century, this figure had fallen to 41 per cent. The birth-rate fell, because the economic checks on family increase operated more strongly when children survived; the survival of a larger number of children brought more competition and delayed the marriage age.¹ It was the pressure of this surplus child labour on the labour market as a whole which was to encourage the agitation in the 'thirties by adult workers for the protection of a ten-hour day, and not, as is popularly supposed to-day, any objection to child labour as such even among the working class of the times.² There were fewer deaths, because as a result of the improvements in agriculture, people were better fed. The effect of improving not merely the quantity but also the *quality* of food by changes in the system of cultivation is apt to be overlooked by historians.

¹ Methods of birth-control, as a deliberate means of checking population, were being widely advertised after about 1823.

² Besides it was not the manufacturers, but the spinners themselves who employed the children. Owing to the conditions in which machinery was operated in cotton mills, a ten-hour day for children and young persons meant a restriction of the hours of adults. As has already been pointed out, there was no objection to the employment of children, as such; it was a traditional practice springing from conditions of peasant agriculture. Indeed, as was well known at the time of the passage of the Act in 1833, the operatives would have agreed to an increase in the children's hours from eight to ten if they could have secured a ten-hour day for adults. There was nothing callous in this attitude, but simply the plain realisation of the fact that it was no use hoping to secure an improvement of the lot of adults by a reduction of working hours, so long as a way was left open for cheaper labour, prepared to work longer hours, to come in and take their place.

It is of interest to observe that during the present war we have had an example of the converse process—a Trade Union Minister of Labour insisting on the employment of young persons in the pottery industry for longer hours in order to enable adults to do the same to help on the war effort.

It is generally forgotten that as early as the Restoration of 1660 English standards of living generally were beginning to rise owing to the availability of increasing supplies of tropical produce, as well as to the expansion of world trade. The people were also better clothed and, owing to improvements in public hygiene, becoming less liable to endemic diseases.

The growth and shifting of population, accompanied by a process of concentration in towns, brought problems so entirely novel that few contemporaries appreciated their nature or magnitude, until it was too late to prevent overcrowding. The problem was constantly changing its shape. Birth-rates, death-rates, and marriage-rates were all changing and, in certain localities, very rapidly indeed. In 1811, excluding London, Great Britain had nineteen towns with more than 200,000 inhabitants, eight of them ports, and another eight textile centres. By 1831, the number of towns of this size had risen to forty-nine. If 2,000 is regarded as the minimum communal population required to qualify as a town, there were, in 1801, 283 towns in England and Wales with an aggregate population of 2,795,000; by 1831, the population of these 283 towns had grown to more than 6,000,000, and by 1841 to more than 7,450,000. The extent to which industry was growing relatively to agriculture is indicated by the fact that, in 1811, there were four English counties with a population over 60 per cent agricultural and fourteen in which 50 per cent or more could be so described. By 1841, not a single county had a population 50 per cent agricultural. All the employees of industry had to be housed and provided with sanitation; and industries and other occupations had to be developed sufficiently rapidly to provide them with employment.

That congestion became serious in many directions is made clear not only by the deplorable conditions of insanitation which are known to have existed in certain of the large towns, and the distress in the countryside after the Napoleonic Wars, but also by the death-rate statistics. At the same time, as Professor Clapham testifies, the typical town worker of the decade 1820-30 was "very far indeed from being a person who performed for a self-made employer in steamy air, with the aid of recently devised mechanism, operations which would have made his grandfather gape."

The conspicuous feature of this transformation was that it

"separated England from her past as completely as the political revolution separated France from her past." There was a rapid increase in the size of businesses and the means of large-scale production as a result of the use of mechanical power. This revolution in productive technique, however, "could not have taken place on a large scale if there had not been corresponding progress in methods of transport, in the organisation of trade and in the diffusion of credit."¹

The English main roads were remade by Telford and McAdam, but the construction of artificial waterways was the outstanding feature of the period. What was almost a mania of canal building and river improvement set in soon after 1790. Speculative excesses in canal production were largely responsible for the crash of 1825. The canals alone lowered the cost of inland transport 75 per cent. Without them, machinery, minerals and heavy goods could not have been carried from the places where they were produced to the places where they were required. Nevertheless, this method of navigation was not suited to meet the needs of an economic system organised on a national basis; it had not been planned or thought out as a whole; there was no uniformity in breadth or depth. Besides, the dimensions and lock arrangements were calculated for horse traction only. Even before railway competition began, the inadequacy of the canals had been realised. Similarly, capital expenditure upon new machines and the manufacture of goods for distant markets would have been impossible without the invention and elaboration of a highly developed system of banking.

These new inventions had a cumulative effect in speeding up growth in output. The acceleration in coal production increased the output of iron; the increase in iron cheapened the cost of machinery; cheaper machinery reduced the cost of extracting coal. The use of mechanically operated appliances spread rapidly. The first steam loom was set up in 1806; within twelve years there were over 2,000 in operation; five years later, the number had increased five-fold. The demand for munitions in the Revolutionary and Napoleonic Wars led to the substitution of coal for charcoal in the metal industries, and the inventions of Roberts, Bramah and Maudslay laid the foundations of modern engineering and the substitution of machine tools for hand labour. Export to distant markets, however, did not specially benefit

¹ See Woodward, *The Age of Reform*, p. 4.

until the coming of the railway and the steamship. Even at home the change in technical methods spread relatively slowly until after the railways had been built; even so, the output of the new machines was fast enough to generate strong opposition forces to these changes in the *status quo*. There was considerable unemployment among handicraftsmen. The distress among the hand-loomers, for example, was severe enough to cause a crisis.

Agricultural work was exacting, and the town workers, including even women and children, had to undergo long hours of labour. There was nothing new in that. The ancient craftsmen had worked similar hours in their homes, as had their children, in conditions which were often far worse than the overcharged air of the cotton mills. The difference was the speeding-up and discipline of the machine, which now forced greater regularity and continuity of work. In extenuation, it must be remembered that even the most far-sighted did not appreciate what was happening or whither economic evolution was leading the country. Not even among the poor did public opinion expect that a government could cure poverty. Implicit in the policy of *laissez-faire* was an admission that the problem was insoluble, or that it must be endured because no one could think of any method of solving it. The tide of change was running fast and no one could see whither it was taking the economic ship. The fund of skill and experience at the service of society was still very limited; business failures were common and no one especially to blame for them. Besides, material progress had long since outrun the administrative order and there were no properly constituted bodies to provide a substitute for the older mechanism of state regulation.

Even in technical matters, the general public adopted a fatalistic attitude. An engineer was regarded as a "mediator between the philosopher and the mechanic," and his "expert" knowledge was quite unable to cope with problems which found a ready solution a few decades later. The opponents of the system also failed to appreciate the significance of the changes that were under way. They showed little power of organisation or constructive leadership. A radical reformer like Bentham, whose ideas and suggestions affected many of the ablest men of the younger generation, was more interested in the mechanism of life than the problems of living. He maintained that "it is with government as with medicine, its only business is the choice

of evils." He was prepared to hand over the administration of the Poor Law to a private company, to recommend a scheme of prison reform which allowed a contractor to feed the prisoners at a fixed sum per head in return for the profits on their labour. Bentham's solution to the problem of pain was merely to avoid it.

The outstanding feature of the industrial phase of this wave of change and enlargement may be summed up as the completion of the conquest, begun in Elizabethan times, of England's domestic market by her own industry. The *quality* of the English industrial evolution of this epoch can almost be epitomised in the history of a single industry—cotton textiles, a leader in this wave of change. The developments in this industry afford as clear an illustration as one can hope to find of the process of economic growth in a single industry. The emergence of the Lancashire cotton industry exemplifies, both in its disturbing effects on the existing equilibrium of forces and in the counter-reactions it generated in the rest of the economic system, the wave-like process of economic development—a leap forward, then a check to allow the new growth to be consolidated, then another advance, and so on to the end of the wave. Several stages can be separately distinguished. The first was the introduction of Indian cotton fabrics by the East India Company, that is, the establishment of a new consumer's product in Britain. The second was the check administered in 1721, by which time sufficient progress had been made to arouse the hostility of the "old firms"—that is, the woollen and silk industries—and secure, in defence of the interests of the English workmen in these industries, for a time, the prohibition of the sale as well as the wearing of printed, painted or dyed calicoes. The third stage was a new advance, following the coming into existence of an English industry using cotton as a weft in a linen warp, which secured exemption for its products under an Act of 1736. Finally came the production of pure cotton fabrics, followed by complete repeal of all obstructive legislation in 1774. But the new industry did not reach its flood-tide till the 'eighties. With the real flood of products came an avalanche of falling prices, and an outflow of the surplus above home requirements to markets overseas. The price of No. 40 yarn was 16/- in 1779, the beginning of the period; it fell till 1784 to 10/11d; it was 7/6d in 1799; 2/6d in 1812; and 1/2½d in 1830. Exports rose from 300,000 pounds in 1781 to 30 million pounds in

1825. By 1802, woollen fabrics had been ousted from their place as the leading article of export.¹

Iron production had a similar history of rapid growth. By the end of the Napoleonic Wars costs of production generally in England were far below those in other countries, and the use of industrial products had spread widely. At the same time, a large section of the industrial field was still untouched by innovation and change—notably building.

The second—or international—wave of enlargement in Britain's economic structure in the nineteenth century was associated with what the Americans have termed the "Railroadization" of the world. It should be taken to include the steamship as well as the railway. So remarkable was the transformation of the surface of the globe effected by these inventions, that a number of the leading economic historians, such as Professor Clapham, feel that this period is far more deserving of the title "the Industrial Revolution" than its predecessor in the eighteenth century.

The economic issues of those days have been so confused by the rivalries of the political factions of the times that the decisive importance of invention is apt to be overlooked. The campaign against the Corn Laws, for example, the essence of which was the rivalry between agriculture and industry, was complicated by views such as those of Cobden, who regarded it as part of a wider plan for the extension of Free Trade as an instrument of peace. As Professor Woodward has stressed: "The controversy over the repeal of the Corn Laws is curiously out of proportion to the results obtained by repeal. . . . The country could nearly feed itself in years of good harvests, and the high duty on imported corn mattered little. In years of bad harvests, foreign crops generally suffered and the price of imported corn could hardly have been lower had there been no duty. Moreover the foreign supply was never unlimited. A steady British market might have encouraged European producers, or hastened the development of American corn lands, but an increase in the supply could not have been very considerable before 1846." The real threat to English agriculture did not develop until a quarter of a century after the repeal of the Corn Laws, when the fall in the cost of land and sea transport, coupled with the vast increase of overseas output,

¹ See Schumpeter, *Business Cycles*, p. 271.

brought a flood of cheap American corn at a faster rate than that at which consumption was growing.

The building of railways has been called "the greatest physical achievement carried out by the human race within a comparatively short space of time." It ushered in a revolution in outlook; for the first time people began to believe in the possibility of an almost infinite improvement in material welfare. It was a period of dramatic innovation and swift change. There was a great stir and movement in every sphere of public activity. A class of business-men emerged who knew nothing of economic tradition, custom and inherited beliefs. They regarded the cult of tradition as bound up with the old regime of Guilds, State control and obsolete techniques. This was the age in which the wave of Britain's industrialisation was to reach its crest and the general layout and location of her principal centres of industry and commerce to be finally settled. The railways also brought greater social mobility by breaking down the isolation of rural England and encouraging adults to travel to places more distant than their market towns and to send their children to the secondary schools in the cities. Lower transport costs set going a wave making for a more extensive and minuter subdivision of labour. This enabled British manufacturers to offer their goods at far lower prices than ever before, both in the home market and in countries overseas; it enabled them to tap fresh circles of consumers. The volume of sales grew rapidly. The railway, itself, became an article of export. British contractors built railways in every continent, and in so doing opened up new regions for exploitation by the machine. The opportunities for the marketing of perishable produce were enlarged by bringing distant country areas in touch with manufacturing cities. This was the period in which civilised humanity fought for and obtained cheap bread.

Progress in shipping and the reduction of shipping freights worked in the same direction. How precipitate was the decline in freights may be seen in the fact that by 1894, the minimum point for the period, they were little more than 20 per cent of the figures in 1873. This fall, while it helped to ruin British agriculture, brought prosperity to British shipbuilding and British shipowners. The iron steamer came into its own. The approximate carrying power of British tonnage adjusted for steam, according to Usher, rose from

a little over 4 millions in 1850 to nearly 31 millions in 1900, or, in shipping cleared for foreign trade, from a little over 2 millions in 1840 to nearly 28 millions in 1900. This was accompanied by a progressive substitution of steel and iron for wood, and technical improvements which greatly increased the carrying capacity, while reducing fuel consumption costs.

This enlargement of the "scale" of the British economic system received marked assistance from the discovery and exploitation of the Californian and Australian gold mines, which both raised prices and speeded up the rate of expansion. But the part played by this gold is, I suggest, usually somewhat exaggerated by economic writers. I agree with Professor Fay when he says: "I hold it fanciful to say that a deflated Europe was saved from another generation of distress by the chance finding of gold at Sutter Creek near Sacramento in California in 1848."¹

It would be a mistake to endow the builders of the railways with any better idea of the goal to which their inventions were leading their country than their predecessors in the earlier industrial revolutions. The picture before their eyes was not that of our present generation, able to look backward and see unrolled before its eyes the abundant variety of goodly fruits which has flowed from this revolutionary invention. On the contrary, as Professor Clapham stresses, the railway promoters showed a curious lack of foresight in many respects. "Each stage in their success came as a surprise to

¹ I know of no case where the development of a major invention or discovery has been permanently held up by a shortage of money in this sense. An economic system obtains the money system it needs. If the existing system obstructs growth, it is discarded like an outworn skin: on the other hand, if basic conditions are not ripe for new growth, new money cannot start it. The position is well exemplified in recent experience where, on the one hand, we have had Britain throwing over the traditional gold standard and adopting a paper standard when the needs of her economic development demanded it, and, on the other, the U.S.A. in the period 1931-39 striving to her utmost to set in train a fresh wave of economic growth by using the money-pump, at a time when basic economic conditions were not ripe for such growth. There have been notable occasions—one of which has already been mentioned, namely the economy of Spain in the sixteenth century, when the silver mines of Potosi were first opened up—when a flood of new money has brought economic ruin. A wave of expansion, helped by an excess of new money, is, in any case, not an unmixed blessing, as owners of agricultural mortgages and other debts were to learn to their cost in the 'seventies and 'eighties.

them." Trucks had been drawn along wooden lines as far back as the sixteenth century. And even as late as 1825, railways were envisaged merely as a convenient means of "moving bulky goods over short distances at moderate speeds to and from navigable water." Few people were then prepared to support a comprehensive scheme of trunk lines. Nevertheless, the growth of public education in a nation becoming progressively "machine-minded," and accustomed to "railway speed," altered the tempo not only of material advance but of man's ability to envisage the immense possibilities that lay in the future.

Let us now turn and examine the effects of this acceleration of growth on the balance between population and environment inside Britain.

PART III

INDUSTRIAL SOCIETY AND ITS AFTERMATH

CHAPTER XII

THE CREST OF THE WAVE

The repeal of the Corn Laws, in 1846, had been the signal that in Britain the nineteenth-century struggle between town and country had terminated in favour of the town. From the end of the Civil War until nearly the close of the eighteenth century, there had, except in years of harvest failure, been a substantial surplus of wheat for export. By the close of the century, however, Britain had come to be an importer on balance.

Nevertheless, thanks to the new technical methods and crops introduced by the agricultural revolution, she was practically self-sufficient before the end of the Napoleonic Wars; and until 1846 the increased productivity of British agriculture, as a whole, all but kept up with the increase of population.

As environment expanded, so the population expanded to fill it. By 1870, the basic lay-out of Britain's domestic industrial structure had been completed. Thereafter, her problem at home was to fill in the details of a pattern the outline of which had been fixed by the location of its principal towns, basic industries, railways and other basic communications. Expansion continued to be "free" only in the agricultural sections of the pattern located overseas.

The effect of removing all obstacles to the free movement of men, capital and goods in and out of the country, and improving the channels of communication between the New World and the Old by building railways and establishing steamship lines, had been to set in motion a wave of overseas investment and emigration, a movement strongly encouraged by the pressure of "congestion" beginning to make itself felt in a number of districts in the homeland. This wave reached its crest in 1873. The nineteen-hundreds witnessed a subsidiary wave, also accompanied by heavy foreign investment and migration. This second wave was started because the overseas areas opened

up in the first wave had been exploited and populated to the point at which they were ceasing to be able to continue to meet Europe's still expanding needs of food and other raw materials as well as their own greatly increased local demands. Some idea of the magnitude of the two waves can be gained from the curves on the chart following the Appendix, which gives the basic foreign trade statistics for the four leading emigrant countries and the four leading immigrant countries of the period. (These curves also indicate the extent to which certain other countries in Europe participated in the British "international" movement.)

The outstanding result of this overseas expansion on Great Britain herself was to deliver an all but mortal blow to her oldest industry, agriculture. Unable to stand up to the competition from vast acres of cheap wheat land, farmed on extensive lines, and assisted by a dramatic decline in transport costs by land and sea, the capital value of English agricultural land was halved in twenty years (1875-95). Another important result was that, on the completion of the railway-building age, the over-expanded British constructional trades, notably iron and steel, became subject to such severe competition from abroad as to reduce substantially the profitability of heavy industry generally in Great Britain.

In the 'seventies, the market for British steel grew but slowly; 40 per cent of the output went to export markets, by far the biggest being Germany and the United States. Both these markets, particularly the latter, were more expansive than the home market. Their populations were larger and growing faster. Besides, industrialisation having started later, there was more scope for crude capital equipment, which takes much steel. The U.S.A., for example, laid over 10,000 miles of new railway track in the boom years of this period, and there were many other special demands for mass-production steels. However, the erection of tariff barriers at the conclusion of this pioneer phase drove British suppliers to a large extent out of both these markets. To sustain, let alone expand, their export trade, they were then forced to discover and exploit alternative new markets. Among these, perhaps the most important were South America, Canada, British Africa and the Far East, which were equipped with docks, railways and other permanent works. But, even here, British suppliers were not safe from competition; for, as soon as

their rivals had supplied the bulk of their own basic domestic needs, they began to follow a two-price policy, maintaining high prices internally and selling cheaply in export markets to keep plants busy. As D. L. Burn has pointed out, the pressure of this competition so seriously handicapped Britain as to make it difficult for her manufacturers to obtain capital to introduce innovations and build more up-to-date plants. The slow rate-of-growth of demand for British steel meant "that very rapid growth of a single plant in any centre of British industry could only occur at the expense of some other plant or plants, as a result either of competition or amalgamation."

This resistance of world markets to one of Britain's important basic exports, coupled with the flood of cheap food which had laid low her agriculture, brought the great depression of the 'eighties. A root difficulty of the situation was that, owing to the pioneer conditions under which the stream of new food was being produced, supplies tended to come on to the market, not only faster than they could be consumed but, owing to the drastic reduction of ocean freights, at such ridiculously low prices that Britain needed to send scarcely any exports at all in return to pay for them. Meantime, having equipped herself with railways and their ancillary services, there was no call at home for the output of British factories producing railway materials.

Since Britain's home and foreign markets were now one (except in so far as parts of the latter might at any time be cut off by tariffs imposed locally) the export and domestic problems were one and the same. The solution in both cases was also the same: to increase sales by compressing more goods into a limited circle of purchasing power; that is to say, give a greater volume of goods for a given amount of purchasing power than before. It is not surprising to find that, in the period after 1874, home investment increasingly took the form of plant and equipment designed to cheapen production costs. By contrast with the previous twenty years of expansion, when the establishment of new centres of industry and agriculture had been the principal task, this period was one of exploiting the capacity of these new centres, i.e. of fitting in more people and more goods by closer packing. This closer packing reacted on the employment pool and, through it, on the rate of population growth. For, while it might be true that for a time, as a

result of cheaper prices, a sufficiently expanded stream of output could be sold to allow of employment being found at the existing level of wages for many of those displaced by the abandonment of old processes of production, nevertheless, as the evidence of the social history of the period bears witness, those were years of growing congestion in the employment field. That congestion, it should be particularly observed, was intensified by the circumstance that the factors which control the rate of population growth are not the same as those governing the rate-of-growth of avenues of employment: the timing of their rates of flow is entirely different. For example, the new entrants in the employment field in this period (1874-1896) were a product of the forces responsible for expanding the birth-rate during the period of expansion, 1850-1874. This is made clear if the curve of population growth is analysed. It shows that the rate of population increase, which had been continuously diminishing at an average rate of nearly 10 per cent per decade ever since 1811-21, when it had reached the highest figure recorded of 18.1 per cent, had, by 1850, declined to that of the closing decades of the eighteenth century. Then came a sudden change. Instead of continuing to decline, the rate-of-growth, despite substantial emigration, took an upward turn (shown most clearly by the "birth" statistics). The percentage rates of population increase in the next fifty years were:—

1851-61	-	-	-	-	-	11.9
1861-71	-	-	-	-	-	13.2
1871-81	-	-	-	-	-	14.4
1881-91	-	-	-	-	-	11.6
1891-1901	-	-	-	-	-	12.2
1901-11	-	-	-	-	-	10.9

These figures clearly reveal the close connection between the increase in the rate of population growth during the twenty years 1851-1871, and the temporary relief from congestion, due to the enlargement of the economic structure, brought about by the railway and steam navigation. From 1875 a renewed decline began. It was in the middle 'seventies that birth-control methods again came into popular favour. Udny Yule, the well-known authority on British population statistics, lays special stress on the fact that there was a distinct turning-point in this period, not only in the birth-rate, but

also in the marriage-rate, in many countries of Europe, not to be accounted for except on economic grounds.¹

After the middle of the 'seventies, there were many factors operating to cause congestion. The filling-in of the outline of the enlarged economic frontier not only brought into operation forces making for a fall in prices but, in the process, workers tended to be eliminated from "old" employment faster than they could be re-absorbed by "new." On the other hand, there was an inducement to those better-off to strive, by limiting the number of their offspring, to

¹ He said: "I feel myself almost compelled to the belief that the course of prices, either directly by its influence on consuming power and on profits, indirectly by its effects on trade, or more indirectly (if it be possible) as an index to the course of some other variable, has been through the past century the factor of most outstanding importance in the rate of reproduction of the race." He noted, however, one important exception. The fall in the fertility coefficient was greater for the decade 1891-1901 than for any previous decade, and this by no means corresponded with the course of prices. The explanation he suggested for this was "the rapidly increased pressure on the labour market brought about in part by the high birth-rate immediately preceding 1876, and in part by the great fall in the death-rate, which had enormously increased the supply of adults provided by a given birth-rate." The evidence for the whole period, from 1850 to 1910, confirms the impression, not only that the birth-rate varies with short-term trade fluctuations, but that, as the turning-point of the birth-rate in 1876 and the occurrence of maximal intercensal increases after periods of high prices strongly suggest, a similar interdependence exists with long-term waves. In short, the birth-rate obeys the law of supply and demand. Brisk trade causes a rise in the birth-rate in exactly the same way as increased demand for any commodity causes sooner or later an increase in supply. But the waiting period is even longer than for agricultural investment overseas. Herein lies the pitfall. The increase in demand is only met by a delivery of the commodity some twenty years later. By that time the "commodity" may not be required! In just the same way the long time taken by a new agricultural area to come into bearing causes long-period fluctuations in population which are highly undesirable. For if a population be, say, above the optimum, the supply of labour being in excess, the birth-rate will be depressed and will stay depressed until the reduction begins to have some effect on the labour market. But, as this effect will not be measurable for fifteen or twenty years, the labour supply may not be adjusted to the demand for, say, thirty years. The birth-rate may by that time have risen again to normal, but the labour supply will continue to fall because of the low birth-rate formerly obtaining. The birth-rate will, therefore, rise above normal and continue above normal so long as the labour supply is in defect; and so the matter will go on, the population swinging about the optimum value for a period of, perhaps, fifty to one hundred years, the birth-rate following suit. This will tend to produce corresponding alternations of long periods in the labour market superimposed on the short-term movements, similar in type to those we met in the case of the cod and the shark and possibly, like them, not subject to control.

conserve for themselves and their descendants the standard of wealth which they themselves had already attained. Among the working-classes, the pressure of congestion was accentuated by the limitation of the hours of work of children and by the Education Acts, which caused children, who until then had been a commercial asset, to become a liability. At the same time, improvements in hygiene were continuing to reduce the death-rate, especially among young children, and this, in due time, intensified the pressure in the labour market among those seeking jobs.

Some idea of the extent of the increase which can occur in the supply of labour, as a result of a period of high birth-rate followed by a period of declining death-rate, may be gained by noting the effect on the supply of adults in the case of our own population in the years which followed the period of high birth-rate immediately preceding 1876.

Taking the adult working population as consisting mainly of males between, say, 20 and 55 years of age, we find that their numbers increased by 10 per cent between 1851 and 1861; by 12 per cent between 1861 and 1871; by 14 per cent in the two following decades, and by no less than 19 per cent during the ten years 1891-1901. Now this very large, quite abnormal rate of growth in the supply of labour was independent of, and clearly could bear no relation to, the "demand" there would be for it when it would, in due time, appear on the market—that is, some 15 to 20 years after it was born. The increase was the result partly of the economic "enlargement" of the period 1850-75, and partly of something which had nothing whatsoever to do with trade and employment—the fall in the death-rate. Obviously, as there had not occurred an altogether unprecedented demand for labour, this rapid and uncalled-for increase in the supply was bound to disturb the labour market, emphasise the problem of unemployment at every recurring depression, and tend to lower both marriage and birth-rates among the wage-earning classes.¹

If we examine the position from the demand side, we find that

¹ See Udney Yule, *loc. cit.* The above calculations have had perforce to be confined to males, as figures for the female working population are not available and it cannot be assumed, as in the case of men, to comprise a major part of the adult female population.

social records point to the existence of a progressive increase of pressure in the labour market—if we except temporary boom periods—from the 'eighties right up to the first Great War; though the pressure was not so strong as in the post-war years. Growing congestion showed itself in a variety of other ways also, and, in accordance with Le Chatelier's principle, led to readjustments and reactions in the economic system to help maintain the position of labour, such as the increased provision of social services, the institution of National Unemployment Insurance and redistributive taxation: all measures designed to sustain, by a redistribution of wealth between rich and poor, standards of living of labour which until then had depended primarily on the automatic expansion in the range and variety of employment, and the progressive cheapening of consumers' goods.

The various *social* reactions to congestion are apt to be overlooked by those who seek a "single" cause of population decline. For the period in question these reactions have been admirably summed up in a pamphlet recently published by two leading authorities on the population problem, Drs. C. P. Blacker, and D. V. Glass. These authors write:

"When we survey the picture of social life in England to-day we are impressed with the number and the excellence of the reasons why married couples should have few children. This would apply equally well to most other countries. Leaving aside the possible influence of the threat of war—which may have been a rationalisation rather than a genuine cause of the recent decline of fertility—the last seventy years have produced, with cumulative intensity, a social and economic system in which it has become increasingly difficult for parents to bring up large families. Given an initial trend towards smaller families, this trend—however caused—began to alter the economic and cultural pattern of the community. It influenced building design, the type of leisure, the conception of standards of living, and, by so doing, affected in turn the general attitude to the large families of the eighteen-seventies. Few people would urge a return to such large families, and fewer still would deny the advantages—to the community as well as to the individual—which have been gained with the help of the decline in fertility. But once a small-family pattern has been established, it is very difficult for the average person, if he wishes to keep his standard of living on the same level as that of his

friends, to break away from the common pattern.¹ The point is, of course, that the population problem is not a single problem, but an aspect of all the social and economic problems by which the individual and the family are affected."

For Britain, the year 1900 appears to have marked a turning-point in a number of respects. During the two previous decades, the terms of international trade had been increasingly favourable to Britain, more and more wheat or timber for the same bit of steel-work or bale of cottons. After 1900, they became less favourable. In addition, a number of younger—and therefore more vigorous—industrial nations were challenging Britain's supremacy in manufacture. A number of conditions at home also suggest an intensification of congestion, after the house-building boom of the late 'nineties was over. Some of Britain's older primary industries, for example, appeared to have passed the optimum point on the curve of improving efficiency.

Mr. G. T. Jones, who has made a detailed investigation of three basic industries,—iron and steel, cotton and building—found that in each of them the tendency to increase the average output per head had practically come to an end by 1900.² It is true that we managed to maintain more or less full employment for the employed classes as a whole, so that new occupations—and migration—must have been able to absorb most of those being displaced. But there is reason to believe that this absorption would have been short-lived had there been no war in 1914, for it was in a considerable measure due to an expansion in the constructional trades caused by the temporary necessity of opening up new overseas areas of raw material and food supply—and preparation for war.

Even so, as has already been pointed out, this precarious balance was achieved only at the expense of a check in the rise of real wages. Stagnation was not confined to wage incomes, for a similar tendency was at work in incomes generally.

Mr. Colin Clark, in his *National Income and Outlay*, points out that data prepared to show the growth of income per head of the

¹ It is not simply a question of poverty, though that is also involved, but of the fact that it is relatively easy for an average married couple to raise a large family in a community consisting of large families, but extremely difficult when the typical family is very small.

² *Increasing Returns*, Cambridge University Press, 1933.

occupied population between 1830 and 1913 conform to a curve of the "S" type. He goes on to say: "There can be no doubt about the trend in the years before 1913, supported as this evidence is by auxiliary data, namely a strong slowing down in the rate of increase. The curve was approaching a definite ceiling." He then, however, proceeds to assert that "during the years since then, something has happened to break that ceiling, and *the fraction of our resources which we care to employ* gives a rapidly increasing yield" (the italics are mine). He concludes that—"at the present time (1938) we have only ourselves to blame for a large part of our troubles. With a reserve of labour of two million workers, we must not complain if our output per head is not higher than it is." Here I cannot agree. Mr. Colin Clark assumes that there should be no difficulty at all in arranging for the absorption of these unemployed in our system *as it is*. But to make this assumption is surely to ignore entirely that an economic system has a structure—an organised group life of its own apart from that of the individuals it contains—the maintenance and growth of which require, as in the case of any other organised structure, the continuing observance both of a certain definite order of construction and of certain rules of stability. Accordingly, arbitrary additions to its labour force cannot be made in the manner assumed by Mr. Colin Clark. Moreover, since its present state will have been largely conditioned by what has been happening in previous years, its present ills cannot be diagnosed—or cured—without first examining some of the conditions of that past. For example, if its present condition is due to some long-standing malady, it is unreasonable to look for a speedy cure.

Mr. Colin Clark appears entirely to have overlooked the possibility that his two million unemployed may have been a symptom, not of a passing sickness, but of something more serious. A similar superficiality of diagnosis seems to underlie the popular theory that the problem of persisting unemployment could have been solved either by the institution of public works—the equating of savings to investment—or, if all else failed, by setting those out of work to provide for their own needs.

Why were these men and women out of work? Surely the broad answer cannot be in doubt. It was because, on the one hand, improvements in industrial efficiency had over the years raised

the standard of individual output so rapidly that, even without the assistance of these unemployed persons, a volume of output of the type of goods they were trained to produce could be placed on the market faster than it could be absorbed, and, on the other, because new occupations could not be created fast enough to re-employ those rendered redundant by improved methods.

In the nineteenth century, our economic structure was able to accommodate not only new additions to the population, but also those eliminated from existing employment by improvements in efficiency and by obsolescence. Why can it do so no longer? My answer is that our present economic structure has passed the limits of its convenient size. Persisting unemployment is not a new thing in history. It is the accepted index that a given economic organisation is in process of breakdown. It was observed during the last years of Athens and the Roman Empire and was very noticeable at the end of the Middle Ages when men were thrown off the land to make way for the modern system. Pressure from the steadily accumulating forces of congestion inside our present system has caused it to break down. Growth in one section or direction nowadays increasingly involves decay in another, without any corresponding net advantage to the whole. The existence, except in moments of boom, of a persisting pool of unemployed people is the sign that this stage has been reached. It is in part the price paid for the more recent improvements in the standard of living of those who have managed still to retain their places in the system.

This must not, of course, be taken necessarily to imply that, had the improved standard not been provided, the unemployed could have been found work. The issues raised are much too complex to justify such a simple conclusion. When an industrial system is in the infant stage, nearly all its sections will be in a phase of rapid expansion. They will, broadly, be fully occupied in providing (1) the basic capital equipment and communications for the system as a whole, (2) the elementary needs of the general body of consumers, and (3) new luxuries and other innovations which, at such a time, only the rich will be able to afford. As the system grows in age, however, these enterprises will begin to experience resistance to the continued expansion at the old rate of the flow of their sales. Not only will the basic needs of capital equipment and elementary con-

sumers' needs become increasingly filled, but also the appetite of the rich for many lines of luxury goods will approach satiety. To keep going, the industries affected will be driven to seek—and prepare—new markets. For a time, these new markets may be created by providing countries in a lower stage of evolution with their needs on loan: these loans to be repaid later by the export from the borrowing countries of some article needed by the lending country, which the proceeds of the loan have enabled them to produce. Beyond this, nothing will remain but to provide the poorer sections of the home population with the luxuries and other amenities previously enjoyed only by the rich. To do this, the luxuries and amenities will have to be produced more cheaply or made available to the poor in some other way, e.g. social services provided by taxation imposed on the rich.

But—and here is one of the keys to the modern unemployment problem—it is no use, when this stage is reached, to employ methods of producing more cheaply which involve cuts in wages and salaries. For those who earn these wages and salaries now provide the only expanding market for the goods in question. It is true that this maintenance of the wages of labour may prevent the development of fresh capital projects of the traditional type and also the exploitation of still newer luxuries for the rich. But this is part of the process of adjustment and redistribution.

The dilemma involved in this shift in the direction of evolution explains the emergence, after the war of 1914–18, of a sharp divergence of opinion in the business world on the propriety of dealing with trade depression by reducing an admittedly inflated level of wages. Manufacturers in the consumption trades were, in general, opposed to a policy of wage-cutting as a cure for unemployment, while such a policy still continued to find favour among those in the construction trades, the direct market for whose goods lay largely outside the circle of the lower levels of income: they had to meet the open competition of manufacturers of other countries whose wage levels were considerably below our own.

But, as it turned out, reduction in wages, even in these latter industries, was not able to be of much assistance in overcoming sales resistance. Times were not propitious for the development of fresh enterprises, outside the automobile and electrical industries to which reference will be made presently; nor were any new inventions, com-

parable with the steamship and railway in their day, being developed quickly enough to provide work for the capital industries. These industries accordingly were soon driven to join in pressing for a tariff to safeguard the limited domestic market that remained in face of the growing pressure of competition from the ever-expanding capacity of their foreign rivals. But a tariff by itself afforded no solution, for existing domestic markets were losing their elasticity. Accordingly, like the consumption industries, these industries were driven to seek other ways of developing fresh markets for their products. These also they were only able to develop by finding ways of catering for the poorer sections of the community. As in their case this could not be done by private enterprise alone, the assistance of the State had to be sought. State forms of capital investment were devised, which came to be known as "Public Works"—that is, public utilities of various kinds, schemes for housing and social betterment, partly financed by the taxation of the rich and partly by loans also largely subscribed by the rich. The progressive redistribution of the wealth of the rich for the benefit of the poor, which these developments set in train, seems now destined to continue in this and other ways until such a time as there is an approximate equalisation of incomes. When this stage is reached, instead of having, as in the nineteenth century, a society with great riches at one end of the social scale and great poverty at the other, there will be one large "middle class" with a relatively narrow spread between the upper and lower levels of income.

This redistribution of income, it will be observed, is another sign that the stage of maturity has been reached. It means that, nowadays, unlike the earlier days of the nineteenth century, it is no longer possible at one and the same time to increase the standard of living of the rich *and* the standard of living of the poor. One can grow only at the expense of the other.¹

But, just as there is a limit to the size to which an economic system can grow without breakdown, by increasing the geographical area covered, so there will be a limit to the extent to which it can grow by a redistribution and specialisation of resources within a limited area. In a limited area of agricultural land, for example, more people—that is, fresh additions to the population—can be fitted in only if

¹ In the above, I am, of course, referring only to *consumable* incomes.

they are "packed" tighter, that is, if intensive methods of cultivation are substituted for extensive, thus enabling more people to be accommodated in a given area. Similarly, in an industrial system, once the primary or "opening-up" phase is completed, during which the relative location of its basic industries, industrial centres and lines of transport and communication will be settled, the problem becomes one of sub-dividing and specialising those industries and industrial centres to fit in more people and sell more goods. The "opening-up," it should be noted in passing, need not all happen at one and the same time. That is, there may be one wave of opening-up, followed by a filling-in; then a pause and, after a period, another wave of opening-up and filling-in, and so on until there is no more unused "area" left to fill. Canada, as we shall see, was exploited as a source of food-supply in at least two separate waves. In the industrial opening-up of Britain, in the nineteenth century, it is possible to distinguish three main waves. Two have already been mentioned: first, the period of the Industrial Revolution, and second, the railway age. The third and, by comparison, minor wave was associated with alterations in the location and further decentralisation of our home towns and industrial areas, for which the additional mobility resulting from the development of cheap motor transport, together with the dissemination of more flexible types of industrial motive power—in particular oil, petrol and electricity—were primarily responsible.

A development which played an important part in this last wave was the anticipation of future income by the device known as hire-purchase finance. This served the useful purpose of enabling people on the lower level of income to purchase expensive articles by instalments when "lump-sum" payments out of current income would have been beyond their means. But, unless used circumspectly, hire-purchase does more harm than good in the long run.¹

¹ The three factors largely responsible for the development of this financial invention were: (1) the desire for some fresh outlet for investment to replace investment in capital goods which was declining; (2) the fact that there were many semi-durable articles, such as houses, motor-cars, refrigerators and other household appliances which it was thought proper for each householder to own but which were too costly to be bought out of current income by the average consumer, and (3) the fact that the steps taken to make available to the poorer sections of the community various kinds of luxuries—or adequate substitutes for them—previously enjoyed by the rich necessitated, for the reasons given earlier, a steadily increasing size of production unit, accompanied by a corresponding

We thus find that the slowing-up in the rate of population growth, to which reference was made in the last chapter, was succeeded in due time by a slowing-up in the rate-of-growth of output of industrial goods. The slowing-up in rate-of-growth in this latter instance was due to the fact that the "expanding frontier" phase of industrial growth was reaching its limit. Expansion of output was being maintained increasingly only by a redistribution of amenities and wealth (mainly via taxation) between rich and poor and by encouraging the community generally to live beyond its means or, more accurately, to use hire-purchase facilities to anticipate future income. The American slump in 1929 ushered in the final collapse. Before pursuing the matter further and showing how for a time those displaced from the industrial machine were able to find occupation in distribution and domestic urban services of various kinds, we must see what had been happening meantime to the agricultural section of Britain's "international" pattern located overseas.

speeding-up of the rate of flow of output. Output per head can be continuously expanded only by making a man work faster and faster with the help of machines. Now, unless the rate of consumption can be speeded up to a like extent, sales will fail to attain the production optimum, and costs will mount rapidly, and the mass-production plant will run at a loss. This is one of the reasons for the rapid development of advertising campaigns and distributive services in the period between the two wars, here and in the U.S.A. Naturally, this method of increasing sales is limited in range and fraught with grave danger for the future, since once consumers have been induced to spend ahead a substantial portion not only of next year's income but that of the year after as well, it follows that, by the time the wave of hire-purchase reaches flood-tide, certain industries will be selling in one year between two and three times as much as they would have sold had anticipation of future income not been practicable. Unfortunately, as new hire-purchasers cannot possibly continue for ever to come forward at the same rate, unless fresh purchasers or the incomes of existing consumers can be increased by geometric progression, it will only be a matter of time before these industries will be overtaken by a severe slump. This slump will be all the more severe since sales are likely to fall even below the level at which they would have stood had hire-purchase facilities never been invented. This explains one of the main causes of the severity of the American slump at the end of 1929; another being the absence of any new basic invention of the standing of either the railway or the motor-car to provide new streams of multiplicative growth.

CHAPTER XIII

COLLAPSE OF THE SECOND BRITISH ECONOMIC EMPIRE OF SETTLEMENT

The system of international trade established by Great Britain in the middle of the nineteenth century was not the "Great Commercial Republic" of Adam Smith's dream—the free functioning of individuals in an unsundered world society. It was "international" only in the sense that the market, within which the sub-division and specialisation of the labour of the British system was allowed to occur, was no longer to be limited by the geographical boundaries of Britain herself. There was no question of the new system being the result of the harmonious development of the nations of the world in their "natural and free" state. Many of them were, it is true, at a later date to attach themselves loosely to it, but it was, and remained, essentially a *British* international system. Its foundation was not due to the conversion of British statesmen to a new economic theory, or to a conscious act of will. It was forced on a reluctant population by the pressure of circumstance. The choice lay between starvation and the adoption of a wider system of trading. As Huskisson declared, in the eighteen-twenties, "England cannot afford to be little." She had to find, outside her existing system, the means of feeding her increasing industrial population. "Without Canada, and those other Dominions, which were still in the womb of time, England willy-nilly would have been compelled after 1783 to accommodate herself to the essential mediocrity of her island circumstance," writes C. R. Fay. Sheer necessity forced her along a path which offered her opportunities of wealth and greatness such as no European nation had ever before enjoyed. The Industrial Revolution gave her a flying start on all her neighbours. As Professor Hancock sums up: "British industry and commerce and finance could now have for the asking an 'informal Empire,' far wider than the formal Empire which Great Britain had lost (by the American Secession) or any which she could hope to gain. If Great Britain chose to identify her interests with those of the Great Commercial Republic—and what other choice had she?—she could make herself its metropolis."¹

¹ *Survey of British Commonwealth Affairs*, Vol. II, Pt. I, p. 47.

The distinction between these two types of internationalism was energetically stressed by the German economist, Friedrich List. He rejected Adam Smith's idea of a *cosmopolitan* economy. "Between the individual and entire society," he declared, "stands the NATION . . . a society which recognises the law of right for and within itself, and . . . is opposed to other societies of a similar kind and can only, under existing conditions, maintain self-existence and independence by its own power and resources."

To List, Adam Smith's "Great Commercial Republic" was merely an aspiration, a noble aspiration no doubt, but not a fact. In the nineteenth century, it was easier for an Englishman than for a foreigner to pay lip-service to that international ideal, because it was equivalent in practice to the informal "Empire" of Great Britain. Great Britain owned and controlled its navigation and commerce; she provided its capital and emigrants; her money was its currency and standard of value; and her homeland was its workshop. As Professor Hancock shrewdly observes: "Was it likely that a German patriot would accept all this, together with a scheme of thought which seemed designed to perpetuate it?" With these facts before him, List proclaimed that Britain owed her industrial supremacy both to her former policy of Protection and her later policy of economic liberalism. In his view, there were no principles of economic policy possessing universal validity in logic. There were only different stages of development, to which different policies were, in turn, appropriate. Germany should be prepared to do what England had once done. But, "in order to allow freedom of trade to operate naturally," he argued, "the less advanced nations must first be raised by artificial measures to that stage of cultivation to which the English nation had been artificially elevated." List agreed that increasing wealth was dependent upon the progressive division of labour, but he desired that progress to take place, as far as possible, upon national soil and under national guardianship. "The reciprocal exchange between manufacturing power and agricultural power," he wrote, "is so much greater, the closer the agriculturist and the manufacturer are placed to one another and the less they are liable to be interrupted in the exchange of their various products by accidents of all kinds."

Alexander Hamilton had put another aspect of the same argument as far back as 1791, when pleading for the imposition of a tariff to

assist in the establishment of American manufacturing industries. In a Report communicated to the House of Representatives, he observed: "If it cannot be denied that the interests even of agriculture may be advanced more by having much of the lands of a state occupied under good cultivation, than by having a greater quantity occupied under a much inferior cultivation; and if manufactories, for the reasons assigned, must be admitted to have a tendency to promote a more steady and vigorous cultivation of the lands occupied than would happen without them, it will follow that they are capable of indemnifying a country for the diminution of the progress of new settlements, and may serve to increase both the capital value and income of its lands, even though they should abridge the number of acres under tillage."

At first sight, Adam Smith's conception of range of market and division of labour is an unanswerable argument for free trade. And in truth it is, if we confine ourselves to the specialisation which it promotes in manufacturing industry. But the historical complement of this was *not* the specialisation of agriculture in countries overseas.

As we saw in the mediaeval world, primitive agriculture is self-subsisting; the settler is, perforce, a Jack-of-all-Trades. It requires the intrusion of commerce or industry into primitive agriculture to compel specialisation of its labour; for commerce, or agriculture in adjacency to commerce, is the only environment in which it will grow.

The United States owed its relative prosperity in the early decades of the nineteenth century, not to any superior policy of land settlement, but to the favourable reaction of the countryside to the rapid growth of industry and commerce in the coastal regions which it served. Gold discoveries performed the same function in the systems of British Columbia, New Zealand and South Africa.

The reason why the setting-up of industry and commerce in juxtaposition to agriculture precipitates agricultural specialisation is that it causes a withdrawal of labour from the land and so leads to increasing attention being paid both to increasing output per head and to the improvement of transport and farm equipment, so that more farm produce is provided than before by a smaller quantity of labour. This increase in supplies is secured by consolidating and specialising existing farm areas and opening up new land. In

their turn, these increased supplies of cheap food and agricultural raw materials speed up progress in the manufacturing and commercial regions, and so on, up to the limits set by the area and the unexhausted fertility of the new lands. The change is progressive, for the increased use of machinery in agriculture tends to cause the urban populations to grow and the rural to diminish, through the increased employment for mechanics in engineering industries in towns and the diminished demands for agricultural labour to produce a given volume of farm products. So also, the development of roads, railways and other means of transportation will both accelerate the exchange of farm produce against manufactures, and create additional employment in the towns for the production of transport equipment and services, and diminish the demand for the services of wheelwrights and blacksmiths and other rural crafts. When the haul is short, as in the pre-railway country villages, the waggoner has his headquarters in the farming district; the longer average haul and more rapid movement of to-day encourage the railway employee and motor-lorry driver to move their headquarters to the towns.

The argument may be summed up by saying that the *relative placing* of the different elements in the pattern of an economic group is a vital element in the proper functioning of the whole. If agriculture and industry are treated as entirely independent activities, as is usually done in economic textbooks, these considerations are naturally deemed to be entirely irrelevant. Since these two activities are not independent, but complementary parts of a single system, regard must be had to their complementary relations. These complementary relations, moreover, must be viewed, not merely at a particular moment of time, but as an historical process of development, starting from the point where, as in the case of a pioneer country, each individual settler, with the help of his family, provides all his own needs, whether industrial or agricultural. At this stage there are no complementary relations at all; agriculture and industry are one: they are inseparable parts of a single whole. As economic evolution in size proceeds, we observe a progressive separation by distance of these two basic activities by a process of subdivision and specialisation until, finally, the stage may be reached where industry and agriculture have become located in entirely different geographical regions and separated from one another by political frontiers and

natural obstacles not easily surmounted. In the course of this separation, strains are likely to begin to develop which become greater as separation increases; these strains tend progressively to offset the advantages of cheaper production costs emerging from subdivision and specialisation. The most familiar of these strains is that arising from the increasing complication and cost of transport and storage and the lengthening of lines of communication. The advantage of cheaper costs of production tends to be offset by dearer distribution charges and a slowing-down in the rate of delivery.

There is also the problem of security. This is not simply the danger lest, in periods of war and disturbance, the food-producing area may become cut off from the industrial area or vice versa, but the danger lest continuity of supplies may be interrupted by, say, the agricultural area either deciding to dispose of its "surplus" to the industrial section of some other economic system offering a better price or more suitable manufactured goods in exchange, or deciding to use it at home, either as food or for some commercial purpose, as is done with a number of agricultural surpluses in America today.

Because of yet another disadvantage involved in separating agriculture and industry, these dangers increase in intensity as an economic system progresses towards maturity. This arises from the circumstance that, as these two sections of economic activity are separated by distance, it becomes more difficult to ensure that the *rate-of-growth* of food production remains properly geared to the *rate-of-growth* of industrial output. This is a rock on which practically every system of international subdivision and specialisation recorded in past history appears to have split. Without some common, overriding, binding authority, armed with dictatorial powers over both sections, it is difficult to see how matters could pan out otherwise in a system whose parts are naturally bound to be subject to different rates of relative growth. In these circumstances, sooner or later, it is inevitable that the process of subdivision and specialisation should result in either the agricultural section providing "surpluses" at a rate faster than that at which they can be absorbed by the industrial section, or vice versa. The situation is similar to that which arises in connection with the different relative rates-of-growth of populations and the capacities of their environments to support them.

Another aspect of the same difficulty is that populations located in

different geographical areas and, consequently, in different environments, will not have the same rates of population growth. This means that the respective rates at which the new avenues of employment have to be provided for the annual flow of new adults in each will not be the same either. If one of these populations happens to be producing almost exclusively agricultural products for another almost exclusively engaged in industrial manufacture, it is easy to see how maladjustment can arise. In theory, a maladjustment of rates-of-growth of this kind might be cured by the area which has gone too far ahead agreeing to "rest on its oars" until the other area has caught up.

If we were discussing a single individual and his family, such a suggestion might not appear to be altogether unreasonable. But, the moment it is realised that we are dealing with separate population groups, the picture takes on a different aspect. A slowing-down in the rate of demand for the output of an expanding population group of agriculturists overseas engaged in producing food and raw materials for an industrial country in Europe will mean, not merely unemployment among existing adult members of that overseas population, but a gradual closing-down of the opportunities of employment for future additions to that adult population; these additions will continue to come forward in a growing population long after the openings for employment—which the parents who bore them expected them to fill—have begun to contract.

The problem, accordingly, is not one of overcoming a temporary disturbance of an otherwise *static* equilibrium, but of dealing with a permanent disturbance of a continuing *dynamic* flow. The latter situation cannot be adjusted except by an alteration of the ratio of relative rates-of-growth. This is not something which can be done immediately or easily. Children, once born, cannot be prevented from growing to manhood and demanding work. A check on population growth via the birth-rate cannot be effective for a long time—twenty-one years, in fact! And the longer the period, the greater will be the pressure exerted on the structure of the system by those seeking work. To attempt to provide rapidly enough alternative varieties of employment, by starting entirely new industries, will usually be ruled out of court, for to establish an industry in an entirely new product will take a long time. According to American

experience, even in the recent age of high speed, it has needed a period of the order of twenty to thirty years to establish a market of any magnitude for an entirely new basic product. Prompt action, however, must be taken if serious social disturbance is to be avoided. The obvious convenient way of escape—short of acquiescing in the maintenance by the State of a large body of unemployed and submitting to a serious cut in the national standard of living—is that producers in the agricultural area should break the unwritten understanding to abstain from industrial manufacture, and embark on making locally the industrial products for which a local market has already been established by importers; that is, they should make on the spot manufactured goods previously obtained from their industrial complement. The industrial complement of the common pattern is likely, in its turn, to counter this cutting-down of its export market by re-developing its agriculture, thus contributing further to the breakdown of the complementary understanding as a whole. As we saw in the case of local economic communities of the mediaeval world, a situation of this kind can, in a modified degree, develop even when the agricultural and industrial sections of an economic pattern are situated in close juxtaposition.

Such a situation did not take long to develop in Britain's "second economic empire of settlement" in the nineteenth century. The decline in food prices from 1873 onwards—especially at the close of the 'eighties, when new competing sources of supply had been opened up in Argentina—was in part an indication that the expansion of the food supply overseas was tending to proceed faster than food consumption in Europe. As a consequence, just about the time that the industries of Britain were beginning to feel the effects of population congestion, the food-providing areas were being encouraged, by similar pressure on the economic side, to turn to industrialisation.

The position of Britain's food supply, in this period, may be summarised as follows: At the beginning of the 'seventies, a good English harvest still meant cheap wheat; ten years later, a good English harvest had nothing to do with prices, for, by that time, the bulk of the United Kingdom's needs were supplied from overseas. For yet another ten, despite the progressive growth in demand, there was a sufficiency of unexploited land in the overseas countries capable of producing a cheap wheat which, thanks to the improved

facilities of transport, could be placed on the market without difficulty. So prices continued to fall. By the middle of the 'nineties, prices reached their lowest point; there was no further virgin land, in the regions so far opened up, that could produce wheat with equal cheapness, employing existing methods. Growth in population had, for the time being, caught up growth in food supply. Once again, as in the 'fifties, it became the turn of the food supply to lead the way to the opening up of fresh territory. For this purpose, new prairie land in Canada, Australasia and elsewhere had to be populated and developed.

So urgent was the demand for additional food supplies that these prairie lands could for a time be developed without limit. The back pressure of falling prices was replaced by the expansive pull of rising prices. So startling was the effect that, compared with an average annual increase in the world's wheat production of 50 million bushels in the whole period 1890-1914, the increase in the five years immediately preceding the War of 1914-18 reached the colossal total of 600 million bushels. This happened despite the fact that the new supply had to be produced under conditions considerably less favourable than those of the earlier "free lands." The new areas opened up in this period were located in Russia, Argentina and British possessions—notably Canada.¹

¹ It may help to obviate misunderstanding later to explain at this point that the fact that Britain was compelled to transfer in this way the location of the agricultural section of her international pattern to a new area in no way invalidates the claim that the continuing stability of her international system, as a whole, would still require the speed of growth of her overseas agricultural output to be properly geared to the speed of growth of her home industrial output. Similarly, the speed of population growth in each area would require to be adjusted to the capacity of its respective area to provide expanding means of employment for its new additions. That, as events turned out, neither the absorptive capacity of the British market for food could be adjusted to keep pace with the speed at which that food could be supplied by the overseas food-producing areas, nor the rates of population growth in the industrial and agricultural sections of the common pattern maintained in proper relation, simply meant that a breakdown of the whole arrangement was inevitable sooner or later. It is true that Britain was, for a time, able to postpone breakdown by shifting her food supply, first to one and then to another virgin area, where no industrial system as yet existed. The only result of this postponement, however, was to make the ultimate breakdown more serious. For, by then, practically all the world's accessible "free" land had been opened up, leaving no unoccupied area over which to disperse the "surpluses" produced, especially those of human beings.

A typical picture of the breakneck speed at which development took place, once the pressure of falling prices had been removed, is provided by the opening up of Canada's "Last Best West," a region whose land was fertile, where there was no timber to delay development and, to suit whose less favourable climate new types of earlier-ripening wheat and farming practices appropriate to a colder climate had already been evolved.

In 1867, the year of federation, these Canadian prairies were still an estate of the Hudson's Bay Company. When, in 1870, they were taken over by the Dominion they contained, besides Indians, only 12,000 people. The chief occupation was still the fur trade. In 1878, they sent their first small consignment of wheat to Britain. Even in 1901, despite the construction of the Canadian Pacific Railway, there were still no more than 420,000 Europeans and Indians combined in the three great provinces. Then the dramatic upsurge of growth began. By 1911, the three provinces contained 1,328,000 people and 42 million acres of occupied land had been added to the 15.5 million of 1901. The acreage under wheat alone had increased 400 per cent. A vivid description of the revolutionary effect of this large-scale wave of new growth in a primitive economic system was given in the Report of the Canadian Cost of Living Committee of 1915. "A spirited immigration policy drew thousands of people to the country, primarily to occupy the new lands. An immense railway and town-building programme was begun, also for the service of the West. The work of locating settlers, providing lumber for their houses, agricultural machinery for their fields, elevators for their crops, drew the entire economic life of Canada out of its accustomed orbit to a greater or lesser degree. The East, in particular, turned to industrialism, the people flocked from farms to the centres of secondary production and distribution, whither, also, a considerable portion even of the immigrant tide was diverted. In earlier times, before Western wheat-growing had assumed the lead in Canadian agriculture, the smaller Canadian towns and cities were supplied from the adjacent country. Once, however, the above change took place—and while it was taking place—they were compelled to go further afield for their supplies. New freights, and the various other expenses incidental to distribution over a wide area, accordingly began to appear as charges in the food bill at the same time that Canada began

to be drawn upon more and more by world markets as a source of supply. Concurrently, the familiar features of an intense speculative boom, especially in land, added their demoralising influence. That several countries, like the United States, Argentina, Brazil and Australia, witnessed developments similar in kind, if not in degree, would account for some intensification of effects locally."

Canadians say that this age of expansion has closed, or is closing. The same appears true of Australia, the country which succeeded Canada as the main centre of investment. The cause of this pessimism is to be found in the course of events in the period after the war of 1914-18. To begin with, the heavy curtailment of the European wheat acreage, during the period of hostilities, caused a rise in prices, which resulted in nearly a twofold increase in the average output of Western Canada. With the recovery in Europe in those post-war years, came a steep decline in prices. But a curtailment of output, due to bad harvests, caused wheat to become profitable again in 1924, and this brought a resumption of expansion. This was to be the end of the wave. By 1929 it had become plain that supply was again regularly outstripping demand. Not only was wheat being produced in excess of demand, but demand itself was beginning to shrink as the decline in the birth-rate, which had been in progress since the 'seventies, at long last became effective. The populations of Western Europe were ceasing to grow, and the consumption of wheat per head was declining.

Professor Hancock sums up: "Old markets were disappearing before new markets were ready to take their place. On the prairies men could no longer exclaim 'It's as good as the wheat!' The questions they now had to ask themselves were: How much of their wheat acreage would they be compelled to sacrifice? What were they to put in its place? How many of their debts would they be able to pay? And the Government had to ask itself disturbing questions. It had to reckon with a disturbance of Canada's economic foundations, a twisting of the areas on which Canada's nationhood had been built."

Just before the outbreak of war in 1939, wheat prices dropped to the lowest level recorded since Queen Elizabeth's day. Farmers in Canada, New Zealand and Australia and, for the matter of that, in Argentine, Hungary, the United States and Great Britain, were all in

the same plight. And wheat was but one of the many raw materials produced in agricultural areas to be affected in the same way. A calamitous fall of prices was at the root of the trouble of them all. Not even tropical products escaped the disaster.

The British Dominions tried to find a way of escape by urging the British Government to adopt a policy of "home producer first, Empire producer second, and foreign producer third." They assumed that their, apparently, modest claim to second place would give them all they wanted. They always hoped that, in the event of the formula being taken to its limit, it would mean "foreign producers nowhere." But the problem was not quite as simple as that. Great Britain could not afford to have her trade with Sweden, Denmark, and the Argentine entirely cut off. There was no guarantee, in any case, that the Empire could replace these countries as purchasers of U.K. products—especially in the same lines. So she was not slow in pointing out that the problem was none of her making. Her own agricultural production had remained virtually unchanged, while her consumption had increased in many lines, especially meat, which had increased by twenty-five per cent.

It was the over-expansion of overseas production that was responsible for the trouble; therefore, the overseas countries—including the Empire—must bear the burden of making it good. The Dominions had already done very well out of the foreigner. But instead of contracting their production in response to the fall in prices, they increased it in the vain hope of sustaining their national incomes by increased sales. Thus, New Zealand in 1928–29 produced just under 100,000 tons of butter, and received nearly £16,000,000 for her sales to Great Britain. In 1933–34 she produced over 160,000 tons of butter and received little more than £10,000,000 for her sales to Great Britain. The expert committee, which reported in 1934, while expressing the view that Great Britain ought to initiate "an equitable scheme of differential treatment of Empire countries," did not conceal the opinion that even a doubly preferential British market would not for ever meet all the needs of New Zealand.¹

Signs that the expansive phase of evolution overseas was nearing its end were also appearing in other directions. The United States of America, having reached the limits of the frontiers of expansion

¹ 1934, New Zealand Dairy Industry Commission, pp. 69–73.

before the end of the first World War, had sought, at its conclusion, to protect the standard of living of her people by passing immigration laws imposing quotas on new entrants to her territory. Europe's answer to this restriction on immigration was to erect tariff barriers, and, behind their shelter, to revive domestic agriculture. Thus, for reasons of social policy, financial defence and military security, Germany, France, and Italy began to separate themselves from the world in wheat. Before the world depression of 1929, world shipments of wheat averaged 800 million bushels; by 1932 to 1936 they had fallen to an average of just over 530 million bushels. European imports were down by 240 million bushels, a figure roughly equal to the suspended demand of the three large continental importers.

It is, of course, admitted that, within the now restricted circle of occupied frontiers of settlement in countries overseas, a great deal of mopping up and consolidation of ground still remains to be done. But, as in the case of Britain since the late 'seventies, this is a case of fitting more people into a limited area, more goods into limited means—not of further expansion in the old sense. Closer packing is not easy in an agricultural area developed on "commercial crop" lines. No one can deny that more people could be maintained on the land of Canada or Australia, but at what standard of living? Neither country could have attained a fraction of its present standard of living as quickly, if ever, had it been developed on the lines of a self-supporting peasantry. Its land was too poor. It was European investment that had enabled Canada, Australia and Argentina to subjugate their areas so quickly; it was the prospect of profitable markets that induced investment. That prospect has now disappeared. It simply does not pay the inhabitants of those overseas regions to bring under control the remaining areas of unproductive wilderness. An Australian economist has written: "If Europe, with its smaller families and autarkies and neglected poor, has decided to reduce its demands on the outer world for the means of life and work, if Asia is unable to make her human demands effective, Australia, like other countries similarly situated, will have to think out new methods of achieving her work in the world. She may have to seek an increased density of rural population at a lower standard of living, rather than a maximum rural productivity contributing to the living standards

of other people no less than her own.”¹ She has not yet faced up to this possibility. Rather has she hastened her efforts to achieve a more even balance between rural and urban production.

While the other Dominions have shown equal reluctance to abandon the traditional view of the United Kingdom as a bottomless market, everywhere can be seen emerging the conclusion—“The Empire Market is not enough!” The changed situation was explicitly admitted in the “Memorandum of Conclusions” agreed by Great Britain and Australia in 1938. The Governments of the United Kingdom and Australia, while reaffirming the vital interest which both shared in their reciprocal partnership in the political, strategical and economic spheres, agreed that attachment to Imperial Preference must be qualified both by their separate protective policies and by their individual policies as world traders. For the first time they severally and simultaneously recognised the fact that their complementary interests, however vital they might be, were only a part of the interest of each of them. The Australian Government recognised “the necessity for the United Kingdom to safeguard and develop her own agriculture.” The Government of the United Kingdom, in return, agreed that an expansion of primary production could not, of itself, support the necessary increase of Australian population, but that Australia must push ahead with “the sound and progressive development of Australian secondary industries.” Both countries thus confessed the insufficiency of Imperial Preference for their separate trading needs, and agreed to recognise each other’s right to make trade agreements with foreign countries.

The conclusion of the agreements between Canada and the United Kingdom and the United States, in the middle of November 1938, dealt the death-blow to the ideal of Imperial self-sufficiency. The Empire is too small for the trading needs of the British Empire countries. It is too small because they are too strong. It is the overabundance of commodities and the excessive capacity to increase their production which has brought about the economic collapse of the second economic British empire of settlement. One Dominion after another now seeks to escape from the grip of the world forces of congestion and contraction by leaving the Empire economic fold.

This slump in agricultural prices must be regarded as a cause

¹ Quoted by Prof. Hancock, *loc. cit.*, p. 196.

rather than an effect of the world depression of the nineteen-thirties. That slump marked the final breakdown of the British system of international trade which reached its zenith at the close of the nineteenth century. Sir Hubert Henderson has summed up the position as follows: "As a broad generalisation it is fair to say that until 1914 the world demand for most agricultural commodities increased more rapidly than could be met, under the existing conditions of agricultural technique, from the existing areas of supply; so that there was a constant tendency to open up new areas of production. Under these conditions, agricultural depressions, though they might be severe, were only temporary interruptions in a long-run process of expansion. But in the nineteen-thirties it became apparent not only that new productive areas were no longer needed, but that the output of most agricultural commodities of which the existing areas were capable was far in excess of the world's demand. A prevailing excess of supply over demand had indeed become evident in the nineteen-twenties. It was 'taken care of' for a time by pooling schemes and other devices for holding surplus supplies off the market in the vain hope that the condition of over-supply might prove only temporary. This naturally served to aggravate the trouble that subsequently arose."

Meantime, the demand for food remained inelastic in the more prosperous countries. According to O. V. Wells, head agricultural economist of the Program Division of the U.S. Department of Agriculture, the average per capita consumption of food even in the prosperous U.S.A. had been relatively stable since the first World War, while the substitution of mechanical power for horse and mule traction had released 40,000,000 acres hitherto used to feed these animals.

Since agriculture was still the main basis of economic life in many countries, and export agriculture the main basis in several, the world depression of agricultural prices after 1929 could not fail to have far-reaching reactions on the other parts of the world economic pattern. It completely upset the balance of payments of many countries, and led inevitably to exchange depreciation and financial default. Thus it was that the surplus of agricultural capacity became one of the major influences in causing the collapse of the Gold Standard. It also entailed an increase of agrarian protection in countries

in which agriculture was such an important political interest that the government could not afford to stand by and see its agriculturists ruined. "These measures are open in detail to various criticisms," observes Sir Hubert Henderson, referring more especially to British policy, "but those who condemn them comprehensively from a lofty international standpoint should explain whether they would really have been prepared to see the virtual disappearance of arable cultivation in Great Britain, or a further depression of the agricultural labourer's standard of life."

Agricultural producers in the Empire and elsewhere sought relief by joining together in commodity regulation schemes, which meant the restriction of either the production or export of the commodity in question by the various producing countries on the basis of quotas assigned to them by mutual agreement.

This restriction of production in the commodities which were regulated automatically created in the agricultural exporting countries an urgent need to develop alternative forms of economic activity, and this meant in practice the use of tariffs to build up secondary industries. This happened just at a time when, as we saw in the last chapter, the industrial exporting countries were beginning to experience progressively increasing difficulties in disposing of the surplus output of their secondary industries. We must expect that the desire of agricultural countries to secure a more diversified economic life and the determination to adopt any measures essential for this purpose will be intensified by the experience of the second World War, which has emphasised the precariousness of an economy which is largely dependent on export agriculture.

CHAPTER XIV

INDUSTRIAL SOCIETY: THE LAST PHASE

The expansion in size of Britain's nineteenth-century economic structure took place in three main waves—if we exclude that which occurred in the hundred years preceding the Civil War, and not yet given its rightful place in history. The first was that known as the Industrial Revolution: it started in the eighteenth century when, following the adoption of the steam engine in industry and the four-course rotation in agriculture (assisted by the establishment of a national system of canals and roads), the local units of the mediaeval system were broken down and their elements recombined to form a larger national unit. A wave of new growth of output and population was released which lasted, roughly, from the middle of the eighteenth century to the middle of the nineteenth. A second wave was set moving when the railway and steamship, from the eighteen-fifties onwards, were employed still further to enlarge and reorganise the units of our system to form an even greater economic unit, the so-called British international system. This wave, which witnessed the beginning of what was referred to in an earlier chapter as the "railroadisation" of the world, lasted in Britain from about 1845 to 1895. A third wave was set going just before 1900, based on the use of electricity and the motor car, thus completing the work of the steam engine and the railway by stepping-up still further the speed of transport and communication, and making possible a substantial measure of further urban growth and decentralisation. The inventions of this last wave differed notably from earlier ones, in that their influence was local rather than international. They did not extend the geographical size of economic systems, but, by increasing short-range mobility and communication, gave a greater measure of flexibility to industrial location *within* national areas. They enabled larger and more concentrated aggregations of industry and urban populations to be accommodated than ever before, with corresponding economies in production costs and selling prices.

For reasons to be given presently the course of this third wave is less easy to follow in Britain than in the U.S.A., where in the three

decades 1900–1930 it brought about the rise of four new giant American industries—street railways, telephones, electric power and motor transport (including petroleum, cement, rubber and plate glass, largely accessories of the automobile and motor road). Dwarfed by these, but also important, were the cinema, the chemical and the electric equipment industries.

U.S. street railway development reached its investment peak in the decade 1900–09; telephone and motor-car and road expansion culminated in the decade 1920–30; electric power alone may still offer prospects of further growth.¹

Some measure of the pace of this wave is provided by automobile production. From a production of only 4,000 units in 1900 it rose to 187,000 units in 1910, 1,000,000 units in 1915, 2,200,000 in 1920, 4,400,000 in 1925 and 5,600,000 in 1929. Garages and service stations multiplied, as also did a vast network of thousands of accessory and supplementary small business units located in all sections of the country, roughly in proportion to the consuming population. But all these developments finally reached the stage of maturity—the top level of the S-curve. Just as new railway mileage, after experiencing a rapid rise from the middle 'forties to the middle 'seventies, had thereafter flattened out, and, after a further temporary spurt in the middle 'eighties, eventually declined sharply in the 'nineties, so the curves for motor-car production and road development in the U.S.A. began to flatten out towards the end of the 'twenties. By the early nineteen-thirties it was clear that the wave of expansion based on this particular set of technological improvements had spent its force in the U.S.A.²

In Britain this third wave took a somewhat different course, owing to the fact that, unlike the U.S.A., she was operating not as a closed system, but as an "international" one. It was still possible, in the earlier years of this period, for British industry to continue to prosper by relying on growth based on the older types of invention, e.g.

¹ The reader is again reminded that what causes culminations of this kind is the slowing down, not in the aggregate growth, but in the *rate-of-growth* of construction. New construction may continue at a high level for some years after, but new construction must *rise at a constant or accelerating rate*, if new investment in the plant and equipment of the subsidiary industries is to be maintained and a business slump avoided. Cf. Alvin Hansen, *Fiscal Policy and Business Cycles*.

² Alvin Hansen, *loc. cit.*, p. 39 et seq.

railway building to open up new territories overseas—*extensive* growth—instead of concentrating on investment designed to foster technological progress within Britain's borders—*intensive* growth.¹ But by 1930 it had become obvious that, owing to changed world conditions, no further headway could be made by "extensive" development. Actually for the greater part of the period 1920 to 1930 Britain sacrificed home development without deriving much benefit from overseas development.

As the prices and monetary conditions suitable for "extensive" development are not the same as those under which "intensive" growth is able to prosper, it is not surprising that such part of the latter type of growth as was able to take place in the period 1920 to 1930 did so in the main with the help of State assistance in one form or another. It is, accordingly, convenient for the purpose of exposition to describe British experience, in the period when the U.S.A. was undergoing its third major wave, in terms of two separate and consecutive waves—a third wave followed by a fourth wave.

What may be termed the third British wave can be said to have started in the early nineteen-hundreds, but its onset was complicated by the events of the South African War. It was associated with the opening up of still newer overseas mineral sources of supply and the few still remaining areas of unexploited virgin agricultural land, especially in Western Canada and Australasia. The start of this new wave was assisted by the considerable additions made to the world's gold supply as a result of the development of goldfields in South Africa and elsewhere, which promoted a rise in prices. This helped to speed up, on the one hand, industrialisation and self-sufficiency in the existing overseas agricultural areas, notably in Canada and the U.S.A., and, on the other hand, to open up still newer sources of food and raw material supply in virgin territory. Britain was forced to transfer her orders for agricultural produce to these new virgin areas, because the local populations in the former areas of supply were increasing to the point when they could absorb the bulk of the local output. This transfer, while it meant obtaining her food supply from more distant and less accessible regions, helped Britain in other ways, for she was able to supply men, capital and goods to assist in the

¹ For a more accurate and scientific explanation of the difference between "extensive" and "intensive" growth, see Chapter XV.

development of these new areas as well as in the industrialisation of her earlier sources of food supply. This wave of expansion into fresh territory by migration and foreign investment was brought to an abrupt end by the outbreak of war in 1914 and, though it was partially resumed in the 'twenties, it never regained its earlier pressure. It involved a shifting of the food section of Britain's economic pattern from one set of overseas areas to another, rather than an enlargement of her pattern as a whole. Like its predecessor in the 'seventies, this wave of "extensive" growth was followed by a wave of "intensive" development associated with falling prices.

The fourth wave of multiplicative growth—and possibly the last of which Britain's present system is capable—was far more limited and localised in scope than any of its predecessors, being almost wholly concerned with internal development. It represented a more complete spread within Britain of the wave of technological improvements set going by electricity and automobile development. It had, as in the U.S.A., been proceeding ever since the late 'nineties, but much more slowly and diffidently. But it was unable to attain peak acceleration until after tariffs and other forms of national protection had begun to be used to isolate the British economy from international influences. The first steps in this isolation had been taken as far back as 1915 when the McKenna duties were imposed on imported motor-cars. The last steps were the imposition of restrictions on foreign investment, the abandonment of the international gold standard, the forced reduction of the domestic rate of interest by the large-scale conversion of public debt in 1932, and the introduction of a full-fledged British tariff system in the following year. Only then was Britain able to participate to the full in the wave of domestic expansion made possible by the invention of motor transport and more flexible sources of power than coal. This explains why it was that in the 'twenties Britain suffered from chronic unemployment and lagged behind in the general post-war recovery, while the United States enjoyed a phenomenal boom; contrariwise, why it was that in the early 'thirties, while the United States was overtaken by a slump of such a devastating character that her national income was cut to one half of its former level, Britain escaped with a decline of income and employment of no more than 15 per cent. Finally, it shows why in the middle 'thirties Britain staged a recovery that brought her level

of production and employment well above that of the late 'twenties, but the U.S.A., having had her motor age, failed to achieve, even at the peak of the very modest recovery that ensued up to 1937, as high an output per head as in the late 'twenties, and found herself faced with an intractable unemployment problem.

The main cause of this diversity of experience, it will be seen, was the difference in *timing* of the motor age in the two countries. The U.S.A., being largely a self-contained national area, was able during the whole of the period 1900-1930 to give full liberty to the development of the wave of "intensive" expansion based on the motor car and electricity; Britain, on the contrary, not being a self-contained area, was unable to do this so long as her rates of interest, prices and the quality of her development continued to be subject to "extensive" international influences, that is, until she took steps to insulate herself against the latter by the imposition of tariffs, departing from the international gold standard, and by other ways.

Britain's vain attempt in the 'twenties to solve her domestic employment problem by recovering her position in the international market by means of her old export industries proved a forlorn hope; first, because most of the accessible undeveloped areas of the world had been opened up; second, because, as a result of widespread local industrialisation, international trade was rapidly losing its complementary character and becoming more and more competitive.

The following table gives the figures for Britain's export trade in a number of boom years from 1860 onwards (revalued at 1913 prices). It shows that the volume of export trade reached in 1913 was not regained after the first World War: there was a fall of 10 per cent between 1913 and 1929 and of 16 per cent between the latter date and 1937.

British Exports (U.K. produce) revalued at 1913 Prices
(million £)

			1860	1872	1913	1929	1937
(a)	To Germany, France, Belgium, and U.S.A.	- -	42	78	117	86	64
(b)	To Latin America and the British Empire	- -	57	83	191	234	200
(c)	To all destinations	- -	136	234	525	470	392

Of special relevance to the argument of this book is the fact that in 1860 the four countries which subsequently became the most highly industrialised and wealthy in the world—Germany, France, Belgium and the U.S.A.—took nearly as much of Britain's exports as did Latin America and the British Empire combined. By 1937 they were taking less than a third of what these primary-producing countries took. After 1913 the demands of the highly industrial countries fell sharply, while the primary producers continued to expand their purchases until 1929, after which they too began increasingly to rank as industrialised countries.

By this time so many fresh competitors had entered the field both as home producers and exporters of staple goods, that it had become a buyer's market. Meantime, the market for the newer types of exports was growing far too slowly to fill the gap; here also, as no one country possessed a monopoly of inventions, competition was severe. So that there is little doubt that, but for the outbreak of World War Number Two, Britain, having completed her wave of domestic expansion based on the exploitation of the automobile, would have joined the U.S.A. in a persisting slump after 1938.

Other long-range factors were now beginning to restrict the capacity of industry to continue to provide expanding opportunities of employment on the earlier scale. These were in part a consequence of the progressive rise in the standard of living of the poorer sections of the community, coupled with the increasing redistribution of income between rich and poor, which was leading to an increasing concentration on mass-produced articles (i.e. products which make relatively small demands for labour in their manufacture) and to a demand for services rather than goods. These changes were not confined to Britain. In a report issued by the International Labour Office as far back as 1935, it was pointed out that, in the United States, Japan and Norway, as well as Great Britain, industrial occupations were so overcrowded that they had ceased to attract new elements in the population.

In an ideal society this elimination of labour would doubtless have been regarded as one of the benefits conferred on humanity by industrial invention, which proceeds by devising means of producing goods more and more cheaply by increasing output per head, until it becomes possible to produce the absorbable needs of the com-

munity in a steadily extending range of articles by employing a progressively decreasing proportion of the total population for the purpose. This condition was reached by agriculture in the leading producing countries before the close of the nineteenth century; it had been approached in the main branches of industry by many in the third decade of the twentieth. The phenomenon escaped general notice, partly because most of those no longer required in industry, as well as new additions made to the employment pool by population increase, were, for the time being at any rate, able to find employment in distribution and services. These were rapidly expanding partly owing to the strenuous efforts being made to check the slowing down in the rate of absorption of industrial output by artificially stimulating sales.¹ But cutting down in this direction also is foreshadowed, for the increasing cost of distribution and services was tending before the outbreak of the present war progressively to offset reductions in costs made possible by improvements in productive efficiency. Sooner or later there is bound to be a rationalisation of distribution also, accompanied by a reduction in its labour pool.² This is being made more than ever necessary so far as the

¹ The Report of the Sub-Committee on Technology of the National Resources Committee of the U.S. House of Representatives states that "the notable expansion in employment which took place between 1920 and 1929 was due almost entirely to the rapid growth of service activities; their occupational requirements differed so widely from those of the basic industries which registered declines that it is extremely unlikely that all the workers displaced from the basic industries obtained new jobs in the service industries." The extent to which new invention is tending to drive the speed of industrial production faster than that at which consumption can keep pace in the U.S.A., the largest producing country in the world, is indicated by the following comment: "If the productivity of 1935 (the latest year for which figures are available) continues the same in 1937 and the composition of the nation's total product remains unchanged, production would have to be increased 20 per cent over that of 1929 to have as little unemployment as existed then."

Of special interest, from the point of view of the argument of this book, is the circumstance brought out by the analysis that the growth in labour productivity since the last war, instead of being spread over the whole period, was concentrated almost entirely in two short spurts during the depressions of 1921-22 and of 1931-33.

² See discussion at the 1937 meeting of the British Association opened by Professor Sargant Florence. Also *Retail Trading in Great Britain* by Henry Smith, who gives an index of total costs of retailing, which shows a rise of from 100 in 1924 to 162 in 1931. This increase, he says, was "considerably greater than the growth of productive efficiency during the period could have justified."

community generally is concerned by the effect on prices of the various forms of self-protection employed by those engaged in transport, general commerce and distribution.

Those who incline to dismiss the above developments as nothing more than a temporary hold-up in a continuing stream of progress need to be reminded that there is a limit to the different kinds of material goods which even a man of wealth desires. His desire for *consumable* goods is not insatiable. He has not the time to enjoy properly more than a limited number; so after a certain point he begins to resist the attempts made to make him consume a larger range of goods by encouraging him to consume the existing range faster. Thereafter, if he is induced to consume more of one, it means he will consume less of another. He then employs the remainder of his income, apart from what he invests, in buying such things as land, or rights over land, for fishing, shooting and other forms of recreation. But even here there is a limit. The growing size and congestion of the larger urban areas, coupled with the attempts made to improve the standard of amenities enjoyed by the ordinary citizen by averaging out the limited space available within a convenient radius, has resulted in a gradual contraction of the area left for the better-off to use either for living or recreation—fewer large houses and properties and more medium-sized and small has become the trend of evolution. Apart from this, the only avenues for expenditure are luxuries and articles the quantity of which could not in any circumstances be greatly or rapidly increased, or types of goods the enjoyment of which depends largely on the ability to afford personal service—domestic servants, chauffeurs and the like. The growing burden of taxation on the one hand, coupled with the progressive rise in the level of remuneration of those who would normally provide these personal services on the other, has placed an obvious limit to expenditure in these directions also.

A good deal, of course, remains to be done in raising further the standard of consumption of the poor, but this surely cannot do more than hold up temporarily the spread of this long-term trend. Even among the poor the mounting cost of *social* charges, services and taxation has been progressively offsetting the long-run increase in *individual* consuming power. For example, their little luxuries, tobacco, beer, entertainment and the like, have been increasingly taxed to help

defray the cost of social services and national defence. Recently some of the poor have even become liable to income tax. The extent of the redistribution of purchasing power that has occurred has been partially camouflaged by the inflation of *money* values of all kinds, including wages, over the past thirty years. Periodic changes in money values of this kind have also helped to obscure another fact, namely, that the main purpose of the revolutionary inventions of capitalistic society, particularly from the Industrial Revolution onwards, has been, not to cater for the select needs of a few rich, but to produce an ever widening and deepening stream of goods for mass consumption at progressively diminishing real prices, of which the lower levels of income have increasingly been the main beneficiaries. In other words, the capitalistic process of production, by virtue of its essential group-mechanism rather than by conscious acts of individual will, has been progressively raising the standard of living of the masses for over two centuries. It is this process which latterly has been losing momentum, despite the speeding up of income redistribution. The complement on the international side of this slowing down has been the progressive decline in the volume of Britain's exports, a decline which is likely to spread to imports after the present war, as a result of population stagnation, loss of overseas assets and the trend towards national self-sufficiency.

The question which naturally arises is: What do these changes portend? I do not think that the argument of this book leaves much room for doubt as to the appropriate answer. They foreshadow the approaching culmination of the main wave of growth of the present type of industrial society in the West.¹ Other facts pointing to this conclusion are: First, the absence of any indication on the horizon of any further new inventions of the standing of the railway and the motor car, likely to be able to effect a fresh "large-scale" release of the forces of growth from the pressure of congestion. In fact, it is difficult to conceive of any in the immediate future. The aeroplane cannot help here; its range is too wide. It is also important to remember that, unlike the railway, the steamship, and the automobile in their day, a more extended use of air transport after the present war cannot set in motion a major wave of *falling* transport charges. On the contrary, the relatively high cost of air transport must limit its immediate use in the main to making contact with otherwise

¹ For further evidence, see Chap. IV. pp. 78-81.

inaccessible regions, and to the rapid conveyance of mails, passengers and luxury articles for long distances. The quality of the British problem, it is true, might be altered by converting England into a gigantic civil air junction with a vast network of airfields and runways. But since, except for Java, no considerable area anywhere in the world has a denser population than England and Wales, the price that would have to be paid would be a still further substantial sacrifice of the space and peaceful content of our already all too limited countryside. The only other important inventions ripe for exploitation at the close of the present war are likely to be substitutes and alternatives for materials already in ample supply. But a population cannot wait for new growth-promoting inventions beyond a certain limited time. Internal readjustment to the existing pressure begins almost immediately (Le Chatelier's principle). Changes in the direction of inhibiting further new growth had already begun before the present war. In the U.S.A. the chief barrier to further expansion of the capitalist system was taking the form of the New Deal policy and State as opposed to private investment; in Britain the main obstacle was the drastic redistribution of private incomes coupled with the increasing expansion in public investment on social services in the broad sense.

Second, there is, as has already been noted, small prospect of an opening up of fresh virgin areas for agricultural and mining development, such as might automatically lead to an outflow and redistribution of the surplus populations from Europe and so, indirectly, to an enlargement of the "size" of their economic systems taken as a whole. On the contrary, there are still overcrowded areas in Europe, where population congestion was exacerbated in the immediate pre-war decades by the contraction of openings for overseas emigration by the U.S.A. and other relatively understocked countries.

The truth is that the basic pattern of international exchange on which industrial systems of the present type have been built up in Europe has exceeded its convenient size. Growth has continued to the point at which the structure of the system has broken down. As the final stage in this process of breakdown, the development of self-sufficiency is beginning to be taken to the point where, not only is each national area aiming at the maximum of self-sufficiency, but separate localities within these national areas are being infected with

the same virus. It is not generally appreciated that self-sufficiency for localities *within* a national unit was the real principle underlying the recommendations of the Barlow Commission on the Distribution of the Industrial Population in Britain, appointed just before the outbreak of the present World War.

The problem that really worried that Commission, apart from national security, was not the relatively modest migration of population to the south, but the industrial decay and depression of the north. That decay had shown that industrial specialisation and subdivision, when taken beyond a certain point, become a source of danger and insecurity—unless rates-of-growth in the separate sections of the wider pattern are geared to some common plan of development and a balanced structure maintained. Not realising that economic evolution is both irreversible and limited in extent, the Commission hoped that it might be possible to secure a “better balance of industries” in the north if further expansion in the south were checked.

They entirely failed to take into account the possibility that in the future there might not even be sufficient new industries to fill the gaps that must inevitably appear in the course of time in the southern areas owing to the normal casualties of industrial evolution; much less that some of these southern areas might themselves be destined at some not too distant date either automatically to split up into still smaller relatively self-contained areas, or to provide new derelict areas.

It was a misfortune that the Barlow Commission was appointed while the wave of “motorisation” was still in progress, instead of a few years later, when the evidence of American experience might have been available to suggest that the south, in its turn, might perhaps be faced with industrial stagnation.¹

¹ Recent American experience is very much to the point because the “motor age” reached its peak in the U.S.A. about 1929, that is, nearly a decade earlier than in Britain. So it affords some guide as to the kind of future to which we could have looked forward after 1937, the culminating point of our own motor age, had there been no rearmament programme or war.

According to Stuart Chase, technical students of population have established the following significant conclusions in regard to the U.S.A. in the years immediately preceding the present war:—

1. Most American cities are not reproducing themselves. They must grow, if at all, by migration from the farms.
2. This migration all but dried up during the depression. Indeed, there was a

Whilst this last possibility must, in the circumstances, still be regarded as no more than a conjecture, it is as well to realise that there are a number of long-term factors pointing to it. For example, congestion in towns and cities like London has already reached the point where every attempt made to raise the standard of accommodation of the poorer classes to that of the rich serves not to give more freedom of movement to the former but merely to redistribute overcrowding. Soon, with the added pressure of the recent confiscatory taxation, we shall all—rich and poor alike—be living like termites in the cell-like rooms of modern blocks of “flatlets,” with the few sticks of furniture and domestic appliances which are all that such limited accommodation will allow.

It is already impossible for everyone to have a motor car; there is neither space for the garages to accommodate them nor the roads on which they can travel. If we attempt to overcome the latter limitation by widening the roads, then we encroach on the housing space. If we pull down houses and, at the same time, insist that those displaced must not be mulcted of increased rents (i.e. their standard of living not reduced) nor removed from the neighbourhood, then we find ourselves compelled to build tall blocks of flats on the now more limited housing area and to give each tenant less living-space than before. The truth is that, if the cost of a larger building is to be defrayed without increased rents, it must be capable of housing a far greater number of families. It will be merely a matter of time before these additional families lead to re-congestion on the roads so recently widened.

An attempt to escape from this vicious circle by speeding up transport—to increase the effective radius of towns—leads to a similar *impasse*. Already it takes a motor-bus longer to get from the

large movement outward. City folk went back to live with parents and uncles who raised food crops. Migration inward will not be resumed on the old scale so long as unemployment is high in the metropolitan areas. Cities are losing population in their centres and gaining at the peripheries.

3. Urban growth appears to be stagnant for the indefinite future. Some large cities, owing to special circumstances, will gain; some will actually lose population in the next few years—an almost unheard-of thing in America.

4. Most rural areas are reproducing themselves with a reproductive index above unity. This is especially true of hillbilly belts in the South, but not so true of New England farms. But birth-rates in rural sections are falling faster than in the cities—because, being higher to start with, they have further to fall.

City to the outskirts of London than the horse-bus it superseded. Just over a hundred years ago, the first mechanically propelled vehicle made its appearance on our roads. To prevent what was then regarded as an excessive speed, this vehicle had to be preceded by a man carrying a red flag. An age of free development in motor-car production and transport mobility finds us reverting to the same restriction. There is a difference, however: a mechanically-operated red light has replaced the red flag!

The inhabitant of London who forty years ago not only had a garden but was, perhaps, only two or three miles from rural amenities, now finds himself as much as ten miles or even more from direct contact with the open country. It is true that transport facilities are more numerous, but their cost is so high that the poor cannot afford to make frequent use of them.¹ And the process is cumulative. To understand the problem, it is necessary to remember that you cannot with comfort provide housing space (including factories) *and* roads for more than a limited number of people on a given area. Space and amenities taken away from the rich and given to the poor bring little fresh happiness because the poor are both too numerous and too overcrowded to benefit.

So congested have some of our large urban industrial areas become, and so difficult communication between centre and outskirts, that their structure has already begun to disintegrate. If recent tendencies are allowed to proceed unchecked much longer, these so-called "conurbations" are likely to break down, leaving a dead central area surrounded by a ring of satellite towns, thus reverting—under a new guise—to the collection of separate units from which they originally sprang; the curve of progress, therefore, being from the village to the large conurbation and then back again to the medium-sized satellite town. All these things have happened because we have forgotten that for every type of city pattern there

¹ As the late Vice-Chairman of the London Passenger Transport Board said—"Over thirty minutes in the train and over sixpence in the fare are serious deterrents to regular travel." Moreover, "numerous as the facilities are on the few occasions when the industrial worker is free to take advantage of them, there is such congestion that the fatigue and length of the journey well-nigh neutralizes any advantage to be gained from the outing."

(See evidence given by L.C.C. to Royal Commission on Geographical Distribution of Population. See also evidence by the late Mr. Frank Pick on behalf of the L.P.T.B.)

will be a most convenient size. The same is true of an economic pattern also.

The movements of people and occupations in the period between the two wars must not be confused with those of the nineteenth century. The former were mainly redistributions within a limited area, not redistributions over a larger area. Before the first World War, as we saw in a preceding chapter, new centres of industry and agriculture were being opened up in various parts of the world, because population growth periodically caught up with the growth in capacity of those already opened up to provide the necessary food and raw materials. This was true also of migration as late as that of the period 1900-14, which was primarily a withdrawal of people from already congested areas, where populations were beginning to press on the means of subsistence and avenues of employment, and the redistribution of these people for the purpose of establishing new industrial centres in existing agricultural regions and opening up fresh mines and agricultural centres in virgin areas. To-day there are no new accessible virgin areas left to exploit.

There was no such expansive impulse behind the migrations of the motor age. The migration caused by "motorisation" and electricity was not very much more than a local decentralisation and enlargement by subdivision and specialisation of *existing* centres. From the international point of view migration was "inward," not "outward" as it was before the first World War. It led, chiefly, to a diversion of people either from agriculture to industry or from industry back to agriculture in regions already fully exploited, at a time when there was tending increasingly to be a world surplus of both agricultural and industrial products of various kinds.

It represented in this respect a duplication of effort rather than new complementary growth. The present war has made conditions even worse; for not only has it led to a vast over-expansion of the very industries in which redundant capacity and excess labour supply had been causing grave social and economic disturbance practically ever since the close of the first World War, but, in addition, has markedly accelerated the industrialisation of the newer overseas agricultural areas. The first problem at the close of this war, not only from the national but also from the international standpoint, will be, not to select from the point of view of the common good the best

geographical areas or individual towns for setting up *new* industrial units or centres, but to decide which of those already set up and developed should have their capacity *contracted*. This is not a passing phase. Few seem to realise that the trend in world industry is towards "concentration," that is, less and less labour, investment and plants to produce more than enough goods. There has also been proceeding a "concentration" in the sense of standardisation—a reduction in the number of varieties of the products manufactured.¹ None of these problems is likely to give rise to questions of industrial location and population redistribution of the same quality as those which have occupied the world over the past hundred and fifty years.

Is there any real way of escape from this blind alley? Past experience suggests one possibility only: to find a way of repeating on an even larger "scale" the miracle of cost-reduction achieved over the past two hundred years or so by using coal in place of timber to substitute mechanical power for human labour in production and transport. On the fuel side this would involve either the discovery of some entirely new—and much cheaper—source of power supply than coal, or of some means of effecting a new "large-scale" cut in the cost of existing fuel supplies by some major reorganisation on the production side—in effect, by a further enlargement of the "scale" of operations. But for this enlargement to be worth while—assuming a way of effecting it could be devised—there would need to be some guarantee of the probability of ensuring a corresponding increase of growth in the "scale" of the market for fuel also. This in turn would depend on the practicability of bringing about a corresponding increase in the "scale" of both industrial production and the market for industrial products. For, as has been pointed out earlier in this book, increasing the "scale" of output inevitably necessitates increasing the *speed* of consumption also.²

Unfortunately, in any given industrial system, once the "scale" of production reaches a certain critical size, depending amongst other things on the age, rate-of-growth, size, method of organisation and degree of saturation of the unsatisfied demand of the population which is being catered for, the speed of absorption of its

¹ It has been said that half the labour in the British textile industries is represented by our desire for changes in fashion.

² See Chapter IV, pp. 64–66.

output by consumers cannot, it seems, be maintained for more than a limited period of time at the rate requisite to make the larger-scale plant a paying proposition. Historically, failure to maintain the speed of consumption seems to have been one of the commoner causes of economic decline, both among individual nations and individual industries. One needs only to recall the economic collapses that followed the overflow of capital into large estates for the production of wine and olive oil in the first century of the Roman Empire, and for the production of tobacco and sugar in the West Indies in the seventeenth century. These articles became such a drug on the market that in the end buyers could not be found for them at any price. The American collapse of 1929 was an example of the same phenomenon in the sphere of industrial manufacture. A special difficulty in the way of enlarging further the present "scale" of manufacturing operations in the case of many industries is that this would in effect mean concentrating world production of certain articles in one or perhaps two regions of the globe, where either the size of the existing market or some other special condition permitted operations to be carried on economically on the vast scale necessary. Security reasons alone would seem to rule this out as impracticable at the present level of evolution of world organisation and civilisation. For example, had cheapness been the only consideration in the interwar period, the whole of the world's motor-car needs—and later one may presume of aeroplanes also—could in all probability have been supplied by the U.S.A. Quite apart from the international payment difficulties that would have arisen under such an arrangement, there is the objection that it would have placed America in a position to dominate the world. Besides, when it comes to the point, most nations prefer a certain amount of diversity in their industries and are willing to accept a lower standard of living in order to obtain it. In practice it is likely that the loss suffered as a result of not giving full scope to the international division of labour will be more than made up by a higher and more regular level of domestic employment.

It is important that the above conclusion should not be misunderstood. It does not mean that work cannot be created by pulling down existing houses, factories and towns, and rebuilding and relocating them on fresh sites, if this be thought desirable in the general

interest; only that this work will not lead to—or be associated with—an enlargement of the “size” of the economic system as a whole. There will be no new wave of *multiplicative* growth (see Chapter IV), no expansion on the compound interest principle such as occurred when similar rebuilding was done in the nineteenth century and in the nineteen-thirties under the impulse of those “large-scale” cost-reducing inventions, the railway and the automobile. In this connection the use of the term “profit-motive” has given rise to a good deal of misunderstanding. It is customary to employ the word “profit” in a purely individualistic sense, as, for example, when it is asserted that no individual will start a new business unless he sees a chance of making a profit. But the term “profit” has a group or communal meaning also. The substitution of railways for canals in the first half of the nineteenth century not only brought great profit to the individuals personally responsible for building them but it also brought great profit to the community at large, by opening up new avenues of growth and employment in other directions. The same is true of the development of motor roads and cars after the last war: it made it possible to provide the inhabitants of congested urban areas with better houses than before and situated in country surroundings, without any appreciable increase in rents (making due allowance for the general increases in prices, including rents, due to the depreciation in the value of the national currency). In future, while we may rebuild our houses and towns and relocate our population and industries as part of a national plan, it will bring no *additional* benefit to the community at large beyond the direct personal benefit enjoyed by the actual occupants of the new structures, the remuneration earned by those who build them, and possibly some saving in social services. No additional profitable openings for investment in other directions will arise directly; no new possibility of additional sources of savings due to an “enlargement” of the scale of operations or the size of the system. On the contrary, there is grave danger that, unless the structure of the system as a whole is entirely recast, even this form of growth may be brought to a standstill by a progressively rising burden of debt charges due to the fact that under a State-promoted plan of “full” employment it may prove quite impossible to keep down prices, since anything in the nature of real competitive

tendering under such conditions would clearly be impracticable. There is the further difficulty that after a certain average level of comfort has been achieved people may begin to refuse to submit to the inconvenience of having their houses and towns rebuilt just to provide employment for their fellows. There will be other possible grounds for revolt also.

In the uphill process of dispossessing the members of her shrinking and rapidly ageing population of their antiquated and congested towns, houses and occupational centres in order to resettle them in ampler surroundings, it is scarcely to be expected that Britain can hope to provide as many congenial openings for individual initiative as she was able to do over the preceding one hundred and fifty years, when her task was to cater for the rapidly growing needs of a young population which expanded from under 10 millions to over 45 millions in a relatively undeveloped and unencumbered world. The probability is that, after the transitional period, more and more of those in the younger and more enterprising age-groups will seek to escape—perhaps by migration to the outlying parts of the Empire, where they will be in urgent demand to assist in building *new* towns and industrial centres—from impoverishing taxation and from being increasingly regimented and preyed on by the growing body of aged and infirm in their home country. Those who feel apprehensive of a reduction in Britain's overcrowded home population should remember that the foundations of her greatness were laid, not when she had achieved the dimensions of a vast world empire, but when she was still a small island community of some 6,000,000 souls. To see this prospective decline in numbers in proper perspective it must be viewed against the background of the estimates of the future trend of world economic evolution that will be examined in the next two chapters. To become smaller again now may be necessary to the achievement of a still higher level of greatness in the future.

CHAPTER XV

TOWARDS THE SERVICE STATE

The key to understanding the present world production problem is to realise that no economic system can go on for ever increasing in content and size. Whatever its shape and structure, the day must inevitably arrive when it must stop growing or disintegrate. When completed, any and every economic structure must be a self-contained and stationary system—like, for example, the “three-field” manorial system of the Middle Ages.

Where the *laissez-faire* Liberal economists went astray was that, like the builders of the Tower of Babel, they believed it was possible to go on increasing the height of their economic “tower” for ever. The Liberal view did little harm in the preliminary or *rapidly growing* phase since the world was embarking on the construction of an entirely new and novel type of economic system with no past world experience to guide it. With no reliable information as to the rules that should ensure continuing stability, it was doubtless wise to give the maximum possible free play to individual initiative and experiment. Indeed, in a sense, there was no practicable alternative. After all, suppose that, when the first skyscraper was erected, there had not been available any reliable data in regard to either the laws of mechanics and architecture or those governing the construction of stable buildings out of ferro-concrete materials, all that could have been done would have been to allow various enterprising individuals to put up skyscrapers and observe what happened. The builders of skyscrapers that did not fall down in a reasonable time would be presumed to have accidentally hit upon the right rules. Individual builders might even have been encouraged to compete in erecting the highest possible skyscrapers by making the price paid to them depend upon the height of the building. But to treat this hit-and-miss experimental expedient as a law, as did the nineteenth-century Liberal economists, was wrong. To go further and insist that it would automatically create satisfactory towns—happy harmonious communities—was absurd. The same applies to the assumption that if individual nations behaved in an equally irresponsible manner they

would be serving the best interest of the world as a whole. We shall return to this point later.

But the misunderstanding went deeper than this. The earlier economic builders could not know that there is a limit to the height to which an "industrial" economic building can be raised consistent with safety; indeed so vast was the structure to be built and so long was it to take to complete, that they never even realised that they were engaged in constructing a *building* at all. They set to work on the assumption that there was no need to maintain any particular relations between the separate activities of the different classes of workers, such as would, for example, need to be maintained between the rates-of-growth of the separate walls, partitions and sections of a building. One should not, perhaps, blame them too severely for this latter error, for it did, for a time, look as though economic man had discovered the secret of perpetual growth; particularly in the mid-nineteenth-century period when populations and geographical frontiers were being enlarged so swiftly and so continuously and when the discovery of ever newer and more rapid ways of turning out goods was forging ahead. Besides, any system still in the rapidly-growing phase of its S-curve will possess a high degree of flexibility. Not until breaking-point begins to be approached will difficulties be experienced. It was not until the close of that century that the physical limits to expansion began to make themselves felt. Thereafter the situation changed rapidly. Before the end of the second decade of the twentieth century, cracks had made their appearance in some of the main walls of the structure; by the beginning of the third, parts of the main foundations had begun to crumble.

The cause of this collapse was really quite simple. Confident in the belief that everything could be left to *individual* enterprise, the builders had entirely overlooked that stability demanded that the separate activities of the different types of industries should be co-ordinated and treated as complementary contributions to a single *communal* building; the method of co-ordination depending on whether a single large "building" or a number of smaller economic "buildings" was the purpose of construction. So confused indeed did the situation become that, even to-day, there are many unaware that the structure which started as a single "international" economic building

has long since broken down beyond repair into a number of separate—albeit still incomplete—“national” buildings.

The safest plan in approaching the problem of production is to assume that the ultimate purpose of every separate population is to provide itself with its own private economic building, at the same time recognising that there is nothing against one or more populations amalgamating to produce a common building. Because they were encouraged to work primarily by the lure of *individual* profit, the members of most of the populations engaged in constructing economic buildings in the nineteenth century entirely forgot that their work had any other purpose than this individual gain. Moreover, so prolonged was the period during which it was possible to leave building operations uncoordinated, that it scarcely entered their minds that the day might arrive when the building might be completed, still less that much of the accumulated labour and stocks of materials of the builders would then no longer be wanted. It was true, as we have seen earlier in this book, that as the various discontinuous stages in the process of building our present economic structure were passed through, certain types of workers and materials became redundant. At these moments there was a good deal of unemployment—a pause—to allow for the demobilisation of the surplus men and materials from the stage just completed and to permit those capable of re-adaptation to be retrained for work on later stages of the building. But instead of these temporary interruptions being treated as a warning of what must ultimately be the permanent condition for many once the basis of the economic structure was completed, they were attributed to certain mysterious forces of evil which interfered with continuous development; these were collectively denominated the “Trade Cycle” malady. The “Trade Cycle,” it was assumed, was amenable to treatment by various forms of monetary cure, which, if applied properly, and in time, could convert the erection of an economic building from a series of discontinuous but consecutive operations into a single smooth continuous process. The truth is that these discontinuities, being natural stages in a process of growth, could have been eliminated only by stopping the process of growth altogether. This is the condition when construction is completed as it is to-day. Our problem is no longer to eliminate “Trade Cycles” but to provide “non-economic” work for persons

who otherwise will be permanently unemployed. Few appear to realise that before the present war the proportion of the population of Britain engaged in industry proper (excluding building, which nowadays is more of a service) was on the decline.

To understand the fundamental nature of the production problem, it is best to begin with an artificially simplified recapitulation of the process of evolution of an economic system of the modern type. Let us start from a pre-industrial system consisting of self-contained and self-sufficing agricultural units—family farms or manors—and let us see what steps it would have to take in order to convert itself into an industrial system. To make the problem as simple as possible let us limit ourselves to a small group of five families of farmers who decide to leave their present farms and migrate to an area of virgin colonial territory and there set up an economic system of the new type. With this object in view, they will agree that instead of, as heretofore, each family providing all its own needs, the tasks common to all the farms will be split up between them in such a manner that the members of one family will concentrate on building the log cabins, the members of another on clearing the land for ploughing and sowing, the third on making farm implements, the fourth on weaving clothing materials, and the fifth on providing the other household requirements. The first thing to be observed about this arrangement is that no further new jobs of a major kind can be undertaken by our farming community unless either one of the existing sets of tasks has been completed, or ways have been devised of doing them with less labour than before. The second point to be noted is that it will not necessarily be possible to carry out all these sets of jobs at one and the same time. They will need to be properly *timed* and done in a given *order*. For example, the land must be cleared before it can be tilled, and before it can be tilled the implements for tilling must be first manufactured. Third, not all these jobs will provide the members of the new community with permanent employment. The work of building the log cabins, for instance, will more or less come to an end once each family has been provided with a house large enough to accommodate the existing household, plus an allowance of space for prospective additions to the family. The work of ploughing, sowing and reaping, on the other hand, will have to be repeated year in year out, so long as the community

remains in being. In the case of the small corporate family group envisaged, those engaged in building will, when their task is accomplished, go, as a matter of course, to help those working on the land or making household equipment—unless meantime the community has discovered new jobs that need doing. This communal sharing of work will occur because, the unit being a small one, our five families will appreciate that they are cooperative members of a *single* unit and, as such, joint contributors to a pool of goods and services to be shared in common, not a number of separate individuals each working for himself. There will thus be no question of giving—as under our present individualistic system—different money valuations to the different jobs.

Differences in the *money* valuation of jobs become desirable only when, as under the present “individualistic” system, each job is regarded as independent of every other and a division of labour is secured largely by offering different rates of remuneration to provide the incentive necessary to attract workers away from an existing job and induce them to go to a new one. The greater the geographical distance by which the different jobs are separated, the greater the monetary inducement will need to be. This is a matter in regard to which there is much confusion of thought to-day, especially among those who seek to compare our own individualistic system with the communal system of a country like Russia. It is, for example, frequently asserted that because, historically, progress under our present individualistic system has involved a movement of workers away from the land into urban pursuits, it follows that even with maximum efficiency the productivity of one-man-day’s work in agriculture is less than that of one-man-day’s work in industry or in other non-agricultural occupations. The *Economist* (November 29th, 1941), for example, observed that “the chief reason for the high standard of living in Great Britain is to be found in the low proportion of the total labour force engaged in the relatively unproductive calling of agriculture.” This is to confuse the means with the end.

As Professor Ashby has pointed out, this statement entirely ignores the fact that (a) these efficiencies are measured by outputs stated *in values*, that is, the outputs are determined by valuation rather than by volume; (b) there are no effective measures of

relative efficiencies in producing foodstuffs and coal, foodstuffs and transport services, or the production of foodstuffs and wholesale and retail trade therein, to say nothing of relative efficiencies in producing foodstuffs and teaching in school or writing for newspapers and the like. The most efficient and progressive agricultural systems yield lower incomes than similar organisations in other industries simply because as a matter of historical fact the men required for industry have been recruited from agriculture by offering them higher wages than those paid in agriculture. This differential advantage has been maintained and in some cases increased by the various forms of economic combination open to industrial, distributive and transport groups—but not to the more scattered agriculturist group—to enforce increases of wages and reductions of working hours. In short “agriculture is a relatively unproductive calling—as regards agricultural incomes—largely because agriculturists are economically unable to enforce a high valuation for their services.”

In the agricultural community of our parable, which is presumed to be operating communally, the basis of valuation would be entirely different—indeed in many respects the reverse of that under an individualistic system in which, in the absence of a protective organisation, the latest occupation tends to be given the highest valuation. Once it was adequately supplied with log cabins, farm implements and household goods and the like, agriculture—food production—would become the major occupation. It would be natural, when the construction of such a system was completed, for all the families to share in the routine work of providing food, so that all might have their full share of the leisure available for shooting, fishing and other agreeable pastimes. In this way the drudgery and expense of food production could be relieved *without cost*, and a Jeffersonian attitude towards life preserved. This is quite the opposite of our present system, where food production is the most despised occupation of all and where, *faute de mieux*, we are increasingly trying to make work by replanning over-expanded urban centres and congested industrial areas in a vain attempt to escape from the overcrowding and confusion which has resulted from our having made agriculture the last instead of the first preoccupation in organising our system. Why is it that we do not find communities living in the simple, happy condition of our five farmers? The superficial explana-

tion is uncontrolled growth. But, if we wish to find a solution, we must probe deeper. The establishment of every new kind of economic structure is an adventure into the unknown. As in the building of the earlier Gothic churches, man has no means, except the process of trial and error, of discovering the laws that will govern the stability of any new type of economic structure he may invent, nor can its ultimate convenient size be forecast. Not till a number of experimental structures have been completed and have stood the test of time can he embark with safety on planning a more permanent building of the new kind. That moment has perhaps not yet arrived in the case of industrial systems of the modern type, though sufficient experience is available to enable newcomers in the field, like the U.S.S.R., to start building from a ground-plan drawn up beforehand instead of employing the experimental brick-by-brick method that Britain was perforce compelled to adopt in the nineteenth century. This difference in approach is the fundamental distinction between what may be called "individual" and "communal" systems respectively, and not, as is popularly supposed, that of making the "service-motive" displace the "profit-motive" as the spur to action. To employ ethical distinctions of this latter kind is to confuse what is in fact purely a *technical* production problem with a political issue. A "communal" production system could in theory operate under political systems as remote from one another in political ideologies as a free democracy and a tyrannical dictatorship. Misunderstanding has arisen owing partly to failure to appreciate that under every political system the degree of freedom enjoyed by the individual is likely to diminish over the years, because of the increase in size and complexity of the group concerned. The truth is that whatever degree of freedom it may be convenient to accord to individual initiative in the earlier stages of growth of an economic system, that system must, if it is to attain stability, end as a self-contained "communal" system, similar to the manorial systems of the Middle Ages and, like them too, it must employ sanctions against individual liberty to enforce observance of the rules of communal behaviour on which its basic order and discipline depend. As in the case of the earlier agricultural systems also, before a stable industrial "communal" unit of this type can be achieved in practice, the experimental method of approach has to be used to discover the appropriate "rotation" or arrangement of industries suited to the circum-

stances of the particular environment in which it is to operate. This is the task on which the so-called "capitalistic" nations may be said to have been engaged over the past hundred and fifty years or so. Many mistakes were not unnaturally made over the years by these countries, but despite setbacks their economic "buildings" continued to grow progressively in size, wealth and capacity until the decade immediately preceding the first World War. The basic aim of their experiments was to increase individual man's capacity to produce and enjoy both manufactured goods and the natural fruits of the earth and so live the more abundantly. The attainment of this objective was rendered exceptionally difficult by the circumstance that, until quite recently, every increase in the capacity to produce goods was apt to lead to a more than equivalent increase in the number of the population desiring to share in that abundance. This not only meant that the objective tended to recede the more nearly it was approached, but also that the "scale" of the problem to be solved was continually being altered. Unfortunately, when the rate of population growth did at length begin to slow down under the growing pressure of the forces of territorial and economic congestion, no forewarning was given to producers. The result was that a condition of general over-production supervened in important sections of the production field, compelling various restrictive practices to be introduced with the object of bringing the rate of production into balance with the rate of consumption. For reasons already given earlier in this book, these restrictive practices have latterly been spreading progressively over the whole range of industrial enterprise. Critics of our present system are right in fastening on monopoly and quasi-monopoly as the crux of the production problem of the immediate future. The basic origin of these monopoly practices has in the main been a desire to prevent ruinous rivalry in industries in which rate of supply has begun permanently to outstrip demand. Unfortunately, monopoly is apt to lead to rigid price-relations, limitation of output and the imposition of a brake on the introduction of more economical methods of production—that is, it tends to check growth of abundance before all needs have been supplied. The growth of monopoly has been as widespread in the U.S.A. as in the United Kingdom, despite the existence there of special anti-trust legislation of a type unknown over here. The traditional solution

would be, of course, to provide once again unlimited markets for the output produced. Can this be done?

Two alternative suggestions at present occupy the stage. To illustrate them in their more extreme forms we may instance on the one hand certain recommendations that have emanated from that traditional home of individualism, the U.S.A., and on the other the Russian experiment in communal organisation which has produced such impressive results in the course of the present war. Incidentally it is misleading to picture the United Nations as one big happy family fighting precisely the same war for precisely the same objectives. The Russians have made it clear that they are fighting not only for Russia but also for the Soviet system; at the opposite pole the Americans have been equally definite that what they are fighting for, besides the destruction of Nazism, is to preserve and extend the American way of life and its free-enterprise economy. In the long run these two approaches to the world problem must prove incompatible.

What for convenience I have termed the American solution is exemplified in the Report of the Temporary National Committee, which was set up in 1938 by the American Congress at the instance of the President and completed its labours in 1941. The Report, which may be a significant prognostication of the post-war social and economic ideology of the U.S.A., recommends a return to freer private enterprise over the general field of industry and finance, in an attempt to revive and strengthen competition so that the traditional system of free enterprise may be perpetuated and made workable. One of the primary causes of the present difficulties is considered to be the disappearance of price competition in many fields, particularly the basic industries. The right to make reasonable profits, which well-managed small businesses are entitled to enjoy, has been taken away from them in many industries by the concentration of control in a small number of dominant corporations. Managed industrial prices mean less employment as well as exploitation of other enterprises and of the community in general. The justification of private enterprise is private risk. "We cannot safely make America safe for the business man who does not want to take the burdens and risks of being a business man." The object of government should be, the Report asserts, to protect and stimulate private enterprise rather than to supersede it.

It cannot, of course, be denied that American capitalism is in process of committing suicide. The relentless spread of modern "large-scale" enterprise is steadily undermining the traditional notion of private property, progressively narrowing the field available for the free exercise of individual initiative and small-scale enterprise, and, by increasingly substituting the paid executive for the owner-capitalist, it is paving the way for the transformation of a middle-class capitalist society into some form of socialised economy. The question is: Can this trend be not merely halted but definitely reversed? The long-range answer surely is: Only at the cost of sacrificing the benefits of cheaper costs and greater efficiency that flow from large-scale working.

The Russian way of escape has been devised on entirely different lines. These lines are so novel to Anglo-Saxon minds that it is necessary to over-simplify what has actually happened in order to make the underlying principles clear. In brief, the Russian experiment may be described as an attempt to operate an industrial system on a communal basis, on the lines indicated in our parable of the five farmers. To understand the essential differences between this and the traditional individualistic system, it is necessary to be clear as to the basic mechanism of the method discovered by experiment in Western countries for continuously increasing output and consumption per head by the process of subdividing and specialising the work to be done. Evolution in productive efficiency has proceeded mainly along two lines known respectively as the *extensive* system and *intensive* system. Both systems achieve their purpose by enabling goods to be produced more *quickly* and more *continuously*. The principal reason why the rate of productivity has always remained so slow in primitive economic systems is that so much time has had to be wasted in overcoming the interruptions caused by the necessity, under conditions where a man is compelled to provide all his own needs for himself, of continually changing from one job to another.¹

¹ Such interruptions are not, of course, confined to primitive systems, for, as the experience of the present war has served to emphasise, they are still one of the more important limiting factors in modern industrial systems in the spheres of both production and distribution. To quote only a minor example: it was estimated in the third year of the war that a saving of only 15 per cent in the turn-round time in the transport of goods would have given an extra capacity equal to a hundred thousand trucks.

As Adam Smith put it in the first draft of his famous chapter on the Division of Labour: "A man commonly saunters a little in turning his hand from one sort of employment to a quite different. His mind does not go with it, and he for some time rather trifles than applies to good purpose."

The *extensive* method reduces these interruptions by first subdividing and specialising the manual work to be done and then giving the workers in as many of these specialised subdivisions as possible more efficient appliances in order to *increase the "area"* of the particular job each can cover in a given time. The *intensive* method of speeding production achieves the same end by eliminating interruptions between the different operations themselves, by *linking up discontinuous processes* to produce a more continuous flow. For example, in the case of our five farms, the simplest way of increasing production by the extensive system would have been to concentrate the arable land of each separate small farm into one or more large fields, so that instead of having many small fields there would only be one or possibly two large fields to be cultivated. The same process applied to the farm implements would mean that instead of five hand ploughs, the work might be done by, say, one tractor. It is because it would be difficult to effect this concentration of farmland in an area already split up into a series of separate small farms that it was suggested that it would be more convenient if the five farmers migrated to a new area and started their new system on a piece of virgin territory. Migrations for purposes of this kind have been, however, as we shall see presently, the exception rather than the rule.

The *intensive* method of increasing output in the case of agriculture takes such forms as the invention of new "rotations" of crops, leading to a speeding up of output either by enabling quicker-maturing crops to be planted or by reducing the number and duration of the fallow periods. For example, in the eighteenth century, by substituting for the traditional "three-field" system of the mediaeval manor a "four-course" rotation including root as well as grain crops the yield of English agriculture is said to have been doubled. In the case of industry *intensive* development is achieved mainly by the substitution of single continuous mechanical operations for what were previously a number of separate independent hand operations.

Extensive development, i.e. the increase in the "area" covered by each worker, is nowadays mainly secured in industry by the assembly-belt system of production. In a present-day motor-car factory, for example, we may find hundreds of people working in teams on a single vast moving belt. We see motor bodies lowered on to their chassis, then paint-sprays coming into action, the glass windows let in, the wheels and tyres screwed on, the tanks filled with petrol; and, finally, every 10 or 15 minutes a brand-new vehicle driven straight off this moving belt to the customer! It will be observed that the difference between the application of the extensive system in industry as compared with its application in agriculture is that the increase in the "area" covered by each worker in the case of industry is achieved not by giving him a larger area or park of, say, cars on which to carry out a single operation, but by, as it were, delivering an expanding park-load of cars in a continuous stream past his bench. This difference in the manner in which *extensive* evolution operates in industry and agriculture respectively has given rise to a certain amount of confusion. It must be borne in mind that, so long as an economic system is still in its preliminary or expanding phase, extensive evolution in industry will, as in agriculture, imply that more people and more production centres are being spread over a wider geographical area. In the later phase, however, extensive evolution in industry will come to mean contraction, that is, less and less labour and investment doing more and more work. And so, with a stagnant population, fewer rather than more production centres will be needed as the years go by. It may therefore be convenient when this phase is reached to substitute the word *concentration* and, moreover, to use it to cover both intensive and extensive developments. This is a matter which, as was noted in the last chapter, assumes special importance at a time when the question of reconstructing our existing towns and industrial centres is so much in the air. How many people appreciate, for instance, that in the maturer industrial systems most established industries are approaching, if they have not already reached, this contracting phase? Or, to take a concrete example, how many are aware that the giant steel industry of the U.S.A. had a plant worth \$3,800,000,000 in 1926 and only \$3 billion in 1937, yet its tonnage capacity rose from 57,800,000 tons to 69,800,000 in the same period!

It is because economic evolution has led to a progressive geographical separation of operations in the case of agriculture, and to a progressive concentration of operations in the case of industry, that as mechanisation has grown we find the density of populations in industrial urban areas has tended to increase both absolutely and relatively to that in agricultural regions.

Actually, had not mechanisation operated in this contrary manner in the two main sections of our economic pattern, it would have been extraordinarily difficult to start many of the more recent modern industrial systems at all. For it has been rarely possible to copy the example of our five farmers in moving to a fresh area before starting a new economic structure. For example, when Britain in the eighteenth century took the first steps to escape from the shackles of her simple mediaeval agricultural structure and embark on the construction of an industrial one, she had to do so within the confines and under the limitations of her existing territory. That transformation involved on the one hand dispossessing people on a considerable scale from their existing occupations on the land by "enclosure" and in other ways, in order to obtain the land needed to constitute larger farming units and introduce an intensive crop rotation; on the other hand, it meant the diversion of land and labour to industrial and urban purposes. But by themselves these measures did not draw men off the land as quickly as they were required by industry, so inducements by the offer of higher wages and the like had to be provided to get men to leave the land and seek occupation in industry. It was because this system of wage differentiation was continued for a century and more that wages in agriculture have remained so low, relatively to those paid in industry.

It is instructive to remember that, almost exactly a hundred years after England, Germany was driven to employ the same expedients to supply the food and manpower needs of her quickly growing western industries. The first step was the destruction of the independent small farm settlements and their replacement by the large-scale Junker estates.

The most recent example of this process is the collectivisation of farming in Soviet Russia. Neither the labour nor the foodstuffs needed for Russian industrialisation could have been obtained within a short time except through the establishment of large-scale "collectives"

coupled with mechanisation. It is estimated that by this means Russia was able, in a relatively few years, to expand her arable acreage by nearly 30 per cent, and her grain production by nearly 15 per cent, as compared with 1913. At the same time the number of workers employed upon the land was reduced by millions. The Russian Government was able to use these workers to effect, almost overnight and substantially out of her own internal resources, that gigantic industrial transformation which has enabled her army to overthrow the vast mechanised forces of Germany in the present war. At their peak in 1928 Russia's total imports from the outside world were only \$650,000,000; by 1938 they had fallen to the paltry figure of \$150,000,000. The relative insignificance of Russia's imports is usually overlooked by those who rely on the industrialisation of countries like China and India to provide vast expanding markets for the products of British and American industry. The rule is that the rate of industrialisation of a backward country depends primarily on the *rate of internal reorganisation*, not on the *amount of external assistance*. As we shall see presently, in the case of Soviet Russia, where agriculture and industry have all along been treated as *inseparable* complementary parts of a single communal system, no serious complications apart from the severe personal hardship and suffering of those dispossessed appear to have ensued. In the case of individualistic Britain, on the other hand, there has developed a direct conflict between the individual and society. Nowadays the individual is finding increasingly that he can continue to better his own position only at the cost of destroying the organisation of his society. It is becoming ever harder for him to improve—and often even maintain—his own personal standard of living in the particular industry to which he is attached except by adopting practices which either involve refusing to produce more goods and charging a higher price for those he does produce, or result in ejecting certain of his fellow-members out of the industry altogether and replacing them by machines. For under conditions of chronic over-rapid production, the only way of keeping abreast of the stream of competition is either to form a monopoly or to produce more cheaply by continually increasing the size of the operative unit and the degree of mechanisation; that is, by continually striving to produce still faster, and employ still less manual labour than before. From the point of view of the economic

system taken *as a whole*, there is no advantage in this latter process, *unless alternative employment can be found for the displaced labour*.

And at the present stage of industrial evolution only in a time of boom or war does it seem feasible to do this at speed on any considerable scale. War *temporarily* resolves the unemployment impasse by providing those displaced with unlimited openings in the Services and other "non-industrial" (in the peace-time sense) directions. But it cannot do this for ever, or without interruption. Besides, it must not be overlooked that, beyond a certain speed, rapid production and consumption lead not only to excessive wear and tear, diminishing returns and an excessive squandering of irreplaceable natural resources, but also to the permanent destruction of sources of supply which, used more slowly, might, like the fish of the sea, have continued to reproduce themselves for an indefinite period.

What can happen nowadays under peace-time conditions in a dynamic and accelerating system such as that of the U.S.A., when mechanisation is accelerated over a wide area in a basic occupation like farming, has been tragically described in Steinbeck's *Grapes of Wrath*, a story of the displacement of the American farmer by the tractor. But there is yet worse to come for the American farmer unless steps are taken to prevent it. The existing tractor, after all, still replaces the farmer only on sub-marginal holdings. But this is not true of the newer machines such as the cotton picker and corn picker. These strike at the very basis of independent farming. As one writer has put it: "The substitution of machines for skill has made it more profitable and more economical, for the first time in history, to raise bulk crops on an industrial basis, on large mechanised estates and with paid migrant labour. Although mechanised farming tends to produce lower yields per acre and exhausts the soil more quickly than even the most careless individual farming, the machine is giving 'Big Business' a definite competitive advantage." Here we see being repeated in modern disguise the experience of the Roman Empire in the days of its decline.

Until relatively recently, it has been customary to defend the above developments on the ground that against the suffering of the farmers must be set the benefits enjoyed by the industrial populations in the form of progressively cheaper and more plentiful supplies of food. When it is pointed out that this mechanisation has been taken

to the point of producing surpluses that even they cannot consume, the reply given is that these surpluses are due to what is termed "under-consumption." But no very clear picture is usually provided of what is meant, or of how this "bottle-neck" is to be removed. The reason why these surpluses of food have arisen is, of course, the unquestioning acceptance of the traditional view that it does not matter how much of any one particular article a man or group of men produces, there will always be other people *in the same economic pattern* to take the surplus off their hands and give them one or more of an ever-growing variety of goods in exchange.¹ For example, the New Zealand farmer who has increased his individual output to the point of producing food for, say, forty consumers, has only done so in the belief that there will be people among the *existing* trading nations prepared to take the thirty-nine surplus portions and give him, if not thirty-nine different articles in exchange, at any rate a sufficient variety to make his extra effort worth while. Actually this no longer happens, because the rate-of-growth in the invention and dissemination of *different types of goods* suitable for exchange for his food has not been rapid enough: the *number of people* able and prepared to offer anything at all in exchange is also ceasing to expand fast enough.

The growing industrialisation of overseas agricultural areas has naturally accentuated the general inelasticity of markets. Britain, which, until overtaken by the U.S.A. before the present war, was the leading exporting nation, had for many years been concentrating her exports in a relatively limited number of categories—cotton goods, which, despite a calamitous decline, still occupied the leading place, other textiles, iron and steel, coal, machinery and a variety of goods made from iron and steel and other metals. With the exception of machinery—largely exported to assist agricultural countries to make locally manufactured goods they would otherwise continue to import—all these classes of export were tending to decline; and the future holds out little prospect of a permanent change in trend.

¹ The only recognised exception to this rule is when the producer of the particular commodity is being displaced by someone producing the *same* commodity more cheaply than he is. A situation in which both efficient and inefficient producers tend to find production unprofitable, and from which they cannot escape by finding alternative occupation, was certainly not one ever contemplated by traditional or "scarcity" economics.

The decline in British exports of the first-named industries cannot be attributed simply to inefficiency, as these same industries were depressed in nearly all the manufacturing regions of the world.

It seems, on the whole, wiser to assume that, judged by considerations of long-term policy, *international* trade in manufactured goods is a transient phase only in the development of the current type of economic system. The same applies to the export of machinery, excepting that in this case the growing phase has still some years to run.

Already international trade has ceased to be simply an exchange of manufactured goods for primary products and become more and more an exchange between industrial countries of the same or similar manufactured articles, the main determining factors being differences in quality between the articles bought and sold. It is surely unrealistic to take for granted that an ever-expanding spiral of international trade can be maintained in perpetuity on such a tenuous foundation, especially as the time-lag in the economic development of the different countries is becoming progressively shorter. This means that eventually export trade may be confined to commodities in the production of which the exporting country enjoys some exceptional geographical advantage, and for which the importing country is unable to provide convenient local substitutes. These are likely to diminish steadily in number. One reason for this is that the continuing expansion of the "individualistic" system of international trade, for the starting of which the geographical maldistribution of natural raw materials and foodstuffs was primarily responsible, has been profoundly affected by recent scientific discoveries which have made it possible to manufacture in an ever-increasing number substitutes for natural materials, and to do this in almost any region and environment at a relatively low cost. Lancelot Hogben, writing in 1937, observed: "We are on the threshold of an age of hydro-electric power, of electrolytical chemical processes, of light metals which exist in abundance everywhere. Cellulose is beginning to displace coal. . . Fertilisers, tank-culture and applied genetics have made land the least important part of capital equipment in food production . . . the advent of a light metal economy will remove one of the powerful sources of national rivalries." Mr. Charles M. Stine, Vice-President of the E.I. Du Pont de

Nemours, in a speech to the American Chemical Society in the U.S.A., described how the advent of the new age is being hastened by "the pressures of this war, which are compressing into a space of months developments which might have taken a half-century to realise if necessity had not forced the pace. . . . The nation will emerge from the war with capacities for making plastics, synthetic fibres, nitrates, hydrocarbons, high-octane gasoline and literally scores of chemicals and other raw materials on a scale that two years ago was beyond our comprehension. . . . The high-pressure synthesis of ammonia, one of the major exploits of the century, will have taken on an industrial status which in terms of new productive capacity may be comparable to the discovery of a sixth continent." What these discoveries mean in plain language is that henceforward it is going to become easier instead of harder to constitute self-contained economic systems or regions on a "group" basis. Meantime, the injection of this flood of artificial materials and substitutes into an unprepared world already suffering from a surfeit of natural materials is likely to make confusion worse confounded. Even before the war, as we have already noted, countries and individuals engaged in the manufacture of traditional materials had no alternative but to protect their livelihoods by placing restraints on the output of these traditional materials and to take steps to protect the industries making them from being overwhelmed by internal cut-throat competition or by substitutes. This suggests that the American individualistic approach is unlikely to provide a solution in the long run.

Let us now examine how what I have termed the "communal" method of organisation might attempt to tackle this problem of monopoly and restriction of production with its associated malady, endemic unemployment. Those who have pondered over the parable of the five farmers will not have failed to note that reasons why over-production leads to difficulties under our present "individualistic" system are, first, that world trade has become competitive instead of remaining complementary, and, second, that the livelihood and security of each individual engaged in production are related, not to output *as a whole*, but to the output of some one *particular* commodity or group of commodities. If the system could have functioned as a more or less self-contained communal system, with external competition under control, and the managers and workers

within it not directly attached to any *particular* part or section of the production field, but voluntarily prepared to move freely to any part of it as conditions might demand, no question of *general* unemployment or restriction of output would arise until at least the needs of every member of the community for the basic commodities had been satisfied. That is to say, "concentration" of production would be carried a stage further by linking into a single continuous chain of production not only the discontinuous processes of each separate industry, but, as far as was practicable, the separate industries themselves. Further, under such a system, if the order of the day were for more motor cars, then all hands in the appropriate group would be turned to filling the communal need of motor cars in the shortest possible time. As that job neared completion, arrangements would be made to leave behind a nucleus to deal with replacements and any new outstanding orders, while the rest of the production corps would move on to make, say, a fleet of aeroplanes, agricultural tractors, or whatever item might be next on the list of communal priorities. This mobile force of executives and workers would receive the rates of pay appropriate to their ranks in their industrial group without regard to the particular section of the productive field in which they happened to be engaged at any particular moment of time, except that bonuses might, if deemed desirable, be given for extra individual effort.¹ The completion of a job at speed would be ground for generous treatment in the matter of holidays, pending preparations for the next piece of work. In this way unemployment might in theory be converted into the blessing it ought to be instead of the curse it actually is to-day. Similarly, in the wider national field, the so-called "Trade Cycle" depressions that nowadays invariably follow the completion of some major reorganisation or alteration of the basic structure of an industrial economic system, such as, for example, the establishment of a railway system or a motor transport

¹ It would not, of course, be necessary for every worker to be trained to do any or every job. There would, as in the case of a fighting army, be many specialised branches and corps, but the high degree of specialisation which exists under the present industrial system would be avoided. The need for this specialisation, so far as the workers generally are concerned, is in any case diminishing rapidly with the spread of assembly-belt and machine-tool production, as has been strikingly exemplified in the present war. Persons entirely unfamiliar with industrial operations have been trained in a few weeks to do jobs which twenty years ago would have had to be delegated to highly-skilled craftsmen.

system in a new country—to mention two major reorganisations the completion of which was followed by widespread distress and unemployment in Britain and the U.S.A.—would provide occasion for increased leisure and holidays for the community generally. Those returning to headquarters at the victorious conclusion of a productive campaign might, as in the case of our five farmers, take turns in relieving those in the more regular routine “garrison” jobs, by working on the land, helping to provide “buffer” stocks of standard needs, assisting in the renovation and improvement of houses, public utilities, and the like. Thus those normally continuously engaged in these occupations might be released to participate in the increased opportunity for the enjoyment of leisure which could now be afforded. Under such a system the inanimate factories and plants would provide the flexible element in employment: it is they that would suffer from periodic idleness and want, not the human beings who work them, as now.

I have deliberately painted a somewhat fanciful picture to emphasise the revolution in traditional ideas that such a system of group organisation would involve. We must, in any case, be prepared to contemplate a number of experiments in entirely novel directions, of which this may be one, not necessarily in Britain itself, but in the world at large. The objective will be an attempt to solve the problem that has arisen owing to the progressive tendency for the rate of production under the greatly accelerated processes of the present day to outstrip the rate of consumption. It is even possible that “concentration” of production of some such kind may prove as potent a weapon in reducing prices in the twentieth century as the international division of labour was in its day in the nineteenth.

If the stage should ever be reached when unemployment would come to be only another name for leisure—a blessing for which our scientists and inventors merited public recognition—the whole economic picture would assume a totally different aspect. “Full” employment, so far from being an ambition, would be treated as a relic of that curse of Adam which bound man to the soil in a routine of never-ending toil, and from which modern science had at long last provided a way of escape. Indeed, “full” employment would be something to avoid, on the ground that it gives rise to undesirable “bottle-necks” and unhealthy inflations of prices and wages.

It should be clearly appreciated that the cause of the supersession of the "individualistic" system would not be that it was a bad system in itself. On the contrary, it has been a necessary phase in the evolution towards a new form of communal life. The position is that we may have reached a stage in economic evolution when on purely technical grounds there may be no way of giving the forces of production a fresh lease of life except by a new reorganisation and recombination of the factors of production of the kind suggested. Let us face the fact: it would mean that the individual would have to give up part of his present type of freedom in order to enjoy another—to many a higher—type of freedom such as would rule in a communal society, in precisely the same way as his predecessor in the eighteenth century gave up the freedom he enjoyed as an independent domestic producer, able to live as he pleased, so that he might participate in the benefits which accrue from the form of subdivision and specialisation of labour incidental to a factory system. Let there be no mistake: this would involve a revolutionary change in existing ideas and practice, and unless it were associated with the birth of an entirely new attitude towards economic problems—a spiritual conversion in effect—it could not possibly succeed in a "free" democratic society. Despite its remoteness from immediate Western issues, it may be of interest to contemplate some of the benefits that it might confer under ideal conditions, and to ask the question whether any one of them may be capable of realisation by some not too drastic modification of our existing system.

In this kind of communal system, for instance, minor discontinuities due to the unavoidable necessity of waves of output and development proceeding by an alternation of phases of acceleration and deceleration might be smoothed out by a suitable "rotation" of jobs and by varying such things as the number of hours worked, the length of the working week and the duration of holidays. Similarly, if the community experienced a sudden need for more of some particular commodity or for some new service, the situation might be met by increasing temporarily the period of work and decreasing that of leisure. The distribution of the communal output of finished goods would be done on a communal basis, possibly by a rationing system in the case of necessities, coupled with freedom to spend the remainder of income as the consumer pleased within

the limits set by the goods provided. Anyone who examines from this point of view the changes in economic practice which have been adopted in connection with the conduct of the present war will be aware that unconsciously we have made what some may regard as tentative approaches towards this different way of living.

History shows that wars almost invariably lead to an acceleration of technological progress, in the sense of increasing the "scale" and speed of industrial operations. The present war has gone further than its predecessors in this direction: it has made inroads into the "slack" that exists under normal peace-time conditions in a modern industrial system, owing, not merely to the existence of an untapped potential labour force of young people, older people, the unemployed and those in relatively unessential occupations, but to the fact that its industries are *separate*; that is, are organised as "closed" units between which no uninterrupted flow or interchangeability of men and plant is possible. This separation, in case of dire necessity, can be broken down, as the necessities of war have made clear. But such a process can be successfully operated only in the case of a community which is prepared to act and behave as a *single* indivisible unit; that is to say, its economic activities must be conceived and planned as a *single* communal operation to which all component private interests must be subordinated for the greater benefit of communal mobility and speed of action. This is hard enough to secure even temporarily under the overriding compulsion of war. It would not, as I have emphasised, be practicable under the relaxed conditions of peace without a revolutionary change in traditional attitudes and objectives.

But reorientations of outlook of this kind have occurred in the past and may well do so in the future. It is therefore perhaps not a waste of time to pursue the matter further.

The central element in a peace-time communal organisation of the above type would be, as in the case of our five farmers, that the community would start by concentrating first on ensuring that enough food, clothing, housing and other basic necessities were provided for all the working members, who would receive their basic ration of all these articles as a basic wage; luxuries and general amenities would occupy a secondary place and provide the element of elasticity to permit of the exercise of individual freedom and

enterprise within the limits permitted by the overriding communal structure.¹ To adopt such a system without stringent safeguards against individual selfishness—or better still a change of heart—would obviously soon lead to chaos.

It also needs to be appreciated that it would be quite impossible for such a community to participate in a system of international trade of the traditional type, that is, based on the separate *individual* producer as the fundamental constituent unit. All the system's relations with other systems and communities would have to be *group* relations. This means that countries adopting this form of organisation would find themselves poles apart in ideas and practice from countries like the U.S.A., which are likely, for some time to come, to continue to make the unit and the individual relation the basis of their collective activity. Naturally, in an already mature economy a revolutionary transformation of this kind could not be effected in a moment. A beginning might be made by experimenting with a single industry—and then only with a section of its activities. Let us, for the sake of illustration, assume that it was to be tried out in the sphere of design in the aircraft industry, in an economic system situated much as that of Britain might be vis-à-vis that of the U.S.A. after the present war. The problem would be to produce such types as, say, comfortable long-range passenger machines, long-range freight machines and fast short-distance 'planes, in competition with the products of the best designers in a country with nearly three times the population, a far larger area and, consequently, vastly greater research facilities per large-scale plant. The development of new types of aircraft calls for the co-operation not only of teams of designers, testers and development and production engineers, but of research groups including first-rate chemists, fuel technologists, aerodynamic and thermodynamic experts, physicists, mechanical, electrical and radio experts, combustion engineers and structural engineers (for wing

¹ Too much can of course be made of the revolution in traditional practice that this would involve. The share of direct *production* in the total activities of a modern industrial state is customarily greatly exaggerated. Besides it is probably a diminishing quantity. How many realise that just before the outbreak of the present war Britain had only about 5,500,000 persons employed in factory trades, and that, excluding firms employing not more than ten persons, of the establishments covered over 70 per cent employed 100 or fewer and over 50 per cent fewer than 50?

and body design). If the best of all these people available in the country could be selected, centrally trained and given the task of evolving national designs, in turn, for each of the new types of machine required, a better result might be secured than by the alternative method of allowing a number of separate competitive firms to evolve a variety of types, none of which would be the best possible. Functional national industrial groups of this kind would facilitate the establishment of liaison arrangements with opposite numbers in other countries. Out of such detached cross-country co-operation for specific practical ends, there might ultimately emerge a sufficiently firm international functional network to provide the foundation for a new type of international society, at a higher level of organisation than any constructed on the basis of territorial and political agreements of the traditional type.

Russia provides a highly interesting example of a country in process of experimenting with a communal system of production. While the Russian system is still largely in the inchoate stage, its results, especially during the war, have already provided suggestive data for the future. If the evidence of writers such as Sir John Maynard¹ is to be accepted at its face value, one of the outstanding characteristics of the Russian experiment is the extent to which the Russian industrial organiser is encouraged to regard himself as holding a similar status to that of a military or naval organiser—that is to say, he is taught to use his organising power solely for national work and, like his opposite numbers in the fighting services, he must be content with little more than the laurel leaves of his achievement as reward. He is brought up to believe that it is no more proper for him to use his organising ability for his own personal benefit than it is for a man of exceptional muscle to use his physical strength to rob on the highway. Perhaps the most extraordinary transformation that is being attempted is in the attitude of the peasant, “the real autocrat of Russia.” He is no longer just a Muzhik; he has become something more dignified, a collective farmer, a Kolkhoznik. “He is a pig-breeding expert or what not, and his wife is a dairy-woman in the *women’s group*. That is different from being a *peasant* with the

¹ *The Russian Peasant*. See also S. M. Schwarz, *Heads of Russian Factories: a Sociological Study*. Lorwin and Abraham, also B. Marcus, *International Labour Review*.

association which is attached to the old status and the old name." Similarly, the change from a right-holder in his own allotment of land to the status of a rural factory hand is being taken to represent—contrary to what might have been expected—a step up the social ladder. Too much perhaps should not be made of these alterations at the moment, but they are straws in the wind of change.

The recent agrarian policy of the Russian Communist Party has been a compromise between the will of the peasantry and the necessity on national grounds of a new and revolutionary system of large-scale cultivation to permit mechanisation to be used to raise the productivity of the land, thus ensuring supplies for the towns and also a sufficiency of agricultural exports to pay for imports of capital equipment from the West.

The radical contradiction between the individual and communal attitudes towards production problems is perhaps best exemplified by a comparison of the status and functions of trade unions in Russia and Britain respectively.

The assumption in the U.S.S.R. is that a trade union is to protect, not the wage rates in a *particular* industry, but the earnings and conditions of *all* wage-earners; and this is best achieved by increasing productivity as much as possible in every section of industry, in order to produce the largest possible surplus for common distribution. The old conflicts between employers and employed and producers and consumers have been resolved in Russia by merging them all into a new single communal group. This does not mean that no new classes are being created to take their places. On the contrary, Stalin has protested vigorously against those who object to the new stratification necessary for the effective operation of a communal system, dubbing them "equality-mongers." But it is stratification of a new kind. For example, many classes of skilled workers and managers are treated as members of a common national industrial force, liable to transfer from one place or job to another. This enforced mobility is partly compensated for, as in the case of the members of a military army, by the guarantee of employment and a pension. In one case we hear of a vertical system of "liaison brigades" of high-pressure workers covering all the various stages of production in related undertakings in an industry. The principle of one-man management is nevertheless widely encouraged. "We cannot tolerate any longer that our

factories should be transformed from productive organisations into parliaments", announced Stalin bluntly at the 16th Party Congress.

A nation that desires the kind of liberty which consists of economic security must, according to this view, be prepared to sacrifice the kind of liberty which consists in the individual doing what he pleases at the cost of communal insecurity. "Perhaps," as Sir John Maynard observes, "there is no such thing as doing what one pleases except on the basis of pecuniary independence."

The amount available for the wages and salaries of workers and management is the whole balance of the State's receipts after the needs of public expenditure (including the capital expenditure needed for industrial development) have been met. This is a matter of simple arithmetic which admits of no dispute. The State may make excessive demands for its own purposes but there is no question of differences between the workers and executives in the separate industries. The Russian conception is framed in the interests of the community as a whole, which stands to gain by increased output and cannot be enriched without it, while the British is framed in the interests of the worker in a particular occupation whom the employer must not be permitted to exploit.

It is when the market fails to absorb the product and there is a prospect of unemployment that the difference between an individualistic and a communal society is liable to become especially marked. In the former, an enterprise, however extensive, covers only one portion of the whole economic field; costs must be covered and profits made *within that portion*, or not at all. When control, direct or indirect, over the *whole* field of production is vested in the community, losses in one portion of the field can be accepted with equanimity so long as the net result over the whole is satisfactory. In short, the communal authority is not dependent upon a profit being made on each and every item in its multifarious business.

But it would be unfair to pretend that the Russian system in something like its present form can be adapted to British conditions, or to deny that many of its current ideas and practices are extremely repugnant to the ruling Western ideology.¹ But no impartial survey

¹ To view the Russian experiment in proper perspective one should bear in mind that, as Prof. J. H. Clapham has recently reminded us, "in Russia there has always been—except in relatively short spells of revolutionary chaos—a powerful ordering authority. When Tsars needed munitions they ordered men to their

of the current behaviour of the historical process can afford to overlook the Russian experiment.

It must be clearly understood that the Russian system just sketched out differs radically from that known as State-Socialism in this country, and its adoption would be as strenuously resisted by the adherents of State-Socialism as it would be by the supporters of individualism. Probably the greatest obstacle to experiments in the direction of such a system lies in the difficulty of reconciling the high degree of mobility demanded with the average man's deep-seated attachment to the locality where he has been born and bred. If it be tried, and events may impel a number of countries to experiment with it after the present war, the method of approach will not be the same in all cases; in some a drastic modification of the existing balance between population and environment will first have to be effected; in others it may be necessary to wait until a fresh convulsion of war or civil revolution has prepared the way for the change-over.

The position of Britain, standing as she does in mid-stream between the New World and the Old, will in any case be one of exceptional difficulty after the war. On the one bank is Europe with its Russian experiment in communal living; on the other stands the U.S.A., still an active adherent to the system of nineteenth-century individualism, concentrating her energies on devising new experiments in the old ways of living with the minimum of change in her traditional economic lay-out.

munition works. . . . A great part of what large-scale industry there was in Russia was State industry before a German professor began to talk of *Staatssozialismus*, just as a great part of Russian agrarian life was communal before the dictionaries contained the word "communism." . . . Those amazing recent accounts of towns emptied and whole industries shifted may be overcoloured, but they are in the Russian tradition." (*The Historian Looks Forward*.) The circumstance that we are at war with Germany and Japan should not blind us to the fact that they too have, *economically* speaking, been experimenting in their own fashion in the new direction, and that under no condition can they revert to the old individualism. This also applies indirectly to certain aspects of our own wartime experience. We have, for example, managed temporarily to solve the unemployment problem by conscripting some 5,000,000 of our youngest and best for the fighting services. They have been compelled to live under conditions of discomfort and constraint, by comparison with which life under normal peace-time employment represents relative affluence and luxury. If something similar were done after the war to make the youth of the country give free service to the country for a limited period of years—by, for example, making them work on the land—we should have taken a notable step in the new direction.

It will be observed that the successful operation of a communal system demands that the country concerned should, as nearly as possible, be self-sufficing, at least in basic essentials. This is not practicable for Britain, with the industries and urban sections of her economic "building" crowded into a tiny island somewhere in the ocean separating Europe and America, while the bulk of the food and raw material producing sections are scattered over the four quarters of the globe, in Africa, Australasia, the Americas and elsewhere. And there is no longer any central connecting link holding them together. The peoples of the overseas areas, so far from regarding themselves as members of a single family community, sharing all things in common and occupying the same "building", tend, as the years pass, more and more to regard themselves as engaged in constructing separate and independent houses of their own. Instead of facing this situation, all parties steadily ignore it. Yet Britain is obviously both overpopulated and unbalanced economically, while, equally obviously, Canada, Australasia and many other overseas Empire areas are underpopulated and possess lopsided economic structures.

I should like it to be clearly understood that the suggestion that our present system of industrial production may be destined to undergo a major change must not be taken to imply that I believe that *industrial* employment will be found under any new system for all of those at present attached to industry, except possibly during the preliminary or formative stage. On the contrary, I hold that, so far as the maturer industrial regions are concerned, the "industrial age" is, in any event, drawing to its close.

The immediate future of countries destined to continue to advance would seem to lie with what I have broadly termed "services." What form those services are likely to take in future I am unable to suggest, beyond the more obvious ones comprised in such popular slogans as "making a better Britain." Entirely fresh services are likely to emerge. The expansion of commercial air transport, for example—if the opportunity is seized in time—might lead to the rapid development in Britain of new types of services dependent on the creative exploitation of the advantages she derives from her fortunate location as a convenient halting-place and entrepôt centre between the Old World and the New. Britain might thus become not only the source of a new type of international tourist clearing centre, but also an

organising point for fresh types of "leisure" services, including, besides sight-seeing, international scientific, recreative and cultural activities in the wider sense. These would have to cater not for the few, but for the million. The gibe against England might then become, not "a nation of shopkeepers," but "a nation of tourist agencies"!

But the achievement of a real "service age" would seem to require a discontinuous revolution in industrial outlook and method of the quality envisaged in the present chapter. Just as the Industrial Revolution at the close of the eighteenth century would have been impossible without the revolution in agricultural technique which accompanied it, so, in the present case, one revolution would appear to demand the other, if real headway is to be made.

But it is well to remember that man is a human being first and a member of an economic group only second. Before he will readily acquiesce in changes in the rules designed to govern his economic society, he will require to be satisfied that these rules will meet his human needs. After all, as specialists in their theorising are prone to overlook, the organisation of an economic society is fundamentally a human problem; the task is to provide the common man with a reasonable and worth-while existence.

CHAPTER XVI

ECONOMICS AND HUMAN NEEDS

Whenever in the past a system, which seemed to hold out the prospect of providing a substantial part of the community with a tolerable life combined with reasonable security, has failed, the breakdown has nearly always been associated with a lack of balance between population and environment, usually over-population either inside or outside its borders. Like the Aberdonian who had produced such a large family that, whenever they travelled in buses and trams, he always had to stand, man has tended to procreate himself out of a "place." Economic systems have usually been built by men who have worked for themselves first, because it is the nature of man to work for himself. This does not mean that man has been unwilling to accept rules of conduct to restrain his activity and keep a balance between what it is right for him to take for himself as a reward for his work and what it is wrong for him to take, but that these rules alone could not save his societies. What have also been needed are rules to guide his behaviour as a member of a group engaged in achieving a common *group* objective. In mediaeval times, as we have learnt, such rules existed. But, to-day, there is no religion or spiritual order to remind man that, unless he fulfils certain obligations to society, in the sense that he must put its well-being before his own, he and it will perish.

Man's social-economic sphere has two quite separate parts: first, there is the free, unregulated part of life—the individual life; second, there is the organised and regulated part responsible for controlling the growth and shape of social and economic institutions—the group life. The former covers the problems we have in mind when we speak of a man's duty to God, to himself, and to his fellows; the latter is concerned with the arrangement of crowds of men into orderly groups for their common benefit, in much the same way as a column of soldiers is organised on the march; the more units can be made to keep in step the faster the column will move; the less they do so, the more the pace of the march will be reduced, as more energy will be wasted by individuals in getting in each other's way.

This explains why, throughout human history, the key to increased production has always been to devise some new way of regimenting either individual producers or the jobs they have to carry out.

In theory, as was explained in the last chapter, the end point of the current trend of industrial evolution in certain countries might be a series of vast communal assembly-belts of more or less continuous production. Along these would be strung out as many as was practicable of the basic industries and production processes of the community, arranged in the order or "rotation" which experiment had discovered to be the most likely under the conditions of the environment to permit the belt to be kept moving continuously forward with the minimum of interruption. Apart from technical difficulties, such as, for example, the impracticability, at the present level of knowledge, of dove-tailing into a single continuous stream the operations of industrial manufacture with those of agriculture subject to the unpredictable vagaries of nature, the main obstacle to the realisation of this theoretical dream is likely to be the objection of the ordinary human being to the restraints and orderliness of regimentation, owing to the innate yearning of the human spirit for freedom. The resistance to regimentation is more than usually strong among those in the adult ages to-day, because they have been accustomed, until quite recently, to a "free" world of rapidly expanding frontiers and populations; that is, a world in which a quite exceptional premium was placed on individual initiative and non-co-operation.

Population growth in an expanding world operates by inducing a condition of mobility which furnishes an incentive both to the individual entrepreneur to adventure in new directions and to the individual worker to be more enterprising. In a rapidly growing population there is a perpetual scarcity of goods and of workers. Starting from a completely unindustrialised country and a low level of population density it is obvious that industrialisation and population growth can continue for a long time before saturation point is reached. So long as fresh areas of land and natural resources, coupled with rapidly expanding populations, are continuously available, there is a persistent shortage of houses, factories, means of transport, industrial equipment and consumers' goods, and of the capital and labour to make them. This shortage constitutes the real *industrial* frontier.

It was this frontier of scarcity that gave the real incentive to individualism in the nineteenth century. Think of the vast masses of capital that found outlets during the nineteenth century for no other reason than that the population of England and Wales quadrupled, that of Europe trebled, while that of the United States increased fifteenfold. Then reflect that this period of growth is reaching its close. To blame the profit motive for the present hold-up is like attributing the death of a centenarian to a misspent youth! It is not that the principles of capitalism and liberal individualism are wrong in themselves, but that they have outlived the conditions that made them for over two centuries the driving-force of industrial civilisation.

Similarly, to say that we can escape from them by adopting something called the "service motive" means little unless it is interpreted to mean that there must be a revolution not merely in our attitude towards the production process, but in the structure and organisation of its system as well.

What gave the individualistic system its dynamic quality was that it held out the promise, to anyone prepared to work, of not only full employment and more and more riches, but also greater social freedom and equality of opportunity. It is to this promise of equality—a levelling up—that Peter Drucker attributes the tenacity with which the European lower middle class and upper working classes—the layers hardest hit by inequality—have clung for so long to "free competition." The hope has been that by increasing efficiency it would be possible to increase equality of opportunity and social status. This "explains the pathetic struggle of the lower middle class to send their children to college and university. . . It is a channel—the professions—where an equality denied to them in business life may be achieved."

In the world of to-day this equality is being progressively denied to them, not by any human action, but by the fact that the machine-operated mass-production assembly-belt is both the most efficient and the cheapest method. But it is the most unequal. The real masters of industry to-day are not the employers or owners, but the planning bureaucrats—the servants of the machine—engineers, draughtsmen, managers, foremen and all the other technicians and executives who have been called into being by the larger units of production. It is

this new bureaucracy which has imposed itself as an insurmountable barrier to the realisation of the socialists' dream by halting the advance towards equality. This is true of communist Russia no less than of the capitalist countries. It is the irresistible logic of technical evolution which is driving the world to build ever larger productive units, and to impose an ever increasing caste-like bureaucracy.

This fact is customarily ignored in most political and economic discussions which usually begin and end by demonstrating that freedom is in itself better than regimentation. We can all agree with this. But what we want to know is: How can we achieve it without losing the benefits of the machine?

The truth is that the individual freedom which was held to be the goal of the Liberal order was the first stage only in the evolution of a new industrial group technique. So long as the group was small in relation to its environment, and its individual property holdings and economic units were also small, a high level of mobility was possible. But the larger it grew the more compact and rigid its organisation became. Indeed, this was an inescapable result of the logic of the Liberal "plan" which by its process of detailed subdivision and specialisation created a compact, organised web of complementary relations which made each man more dependent upon his neighbours than in a society in which no such subdivision existed. Losing his private freedom, man became more and more a cog in a machine. "All progress in technique is bound up with additional social organisation. The division of labour subjects the individual to the social coercion which co-operation entails," writes Karl Mannheim.

The more modern technical organisation frees us from the arbitrary forces of nature, the more we are entangled in the social relations which it has created. From the strictly human aspect this "substitute for nature" can be not less drastic and menacing than nature itself, especially so long as we do not know enough about it to understand how to control it.

Just as the cure for nearly every economic evil in the nineteenth century was supposed to be "freer" trade and more freedom for the individual, so the cure for all social evils was supposed to be more democracy—greater equality of opportunity in such things as voting power, education and obtaining jobs. In the earlier stages of the wave, progress in these directions was easy. There was so much of

the old life to be swept away and, besides, the wave of new growth had not been operating long enough to generate the obstructions that were, in due time, to bring it to a halt. So long as few could either read or write, or possessed votes or tolerable living conditions, democracy could boast, with pride, that it had discovered the panacea for all social and economic ills. But it is not quite so easy to enter the same plea now that we are approaching fulfilment in all these matters.

It begins to look as though liberal democracy has created more problems than it has solved. In England we can to-day provide everyone with free education, voting power, and, if need be, free food and housing. But what we cannot do is to provide everyone with a worth-while job—something which will not only provide him with the wherewithal to live, but with an opportunity to “get on” and to develop his personality. The habit of regarding the different classes of society as static divisions has distracted attention from the high degree of fluidity that has been one of the most valued features of democratic societies during the past century. How many people who contrast the condition of the present-day working class with that of, say, the middle class, realise that the grandparents—and often even the parents—of probably half to three-quarters of the present middle class were members of the working class of their day? The same is true of many in the upper class. The closing of the age of expansion has slowed up this mobility. Besides there are no grounds for assuming that it could have continued without end.

The old revolution was a revolt for “individual” freedom. The new revolution may well be a revolt against “individual” freedom. The clamour for freedom is heard more rarely in the market-place, because it has been ceasing to bring advantage. The demand is for social security; this means control, protection, the limitation of the freedom of the *individual* to do what he pleases with his own capital or labour.

Similarly, in the international political sphere, the approaching stagnation has led to a quest for what is known as “collective security”—a kind of international political cartel with monopoly powers. Its underlying purpose—though this is not commonly realised—is to protect the “haves” against the “have-nots”, the stagnant populations and economic systems which have come nearest to achieving plenty against those which are still growing and are

still living in poverty. Unfortunately, these latter, like all expanding civilisations, do not think in terms of universal security or international guarantees, or world peace. They do not look to other countries coming to their rescue but, like Great Britain in her prime, they prefer to rely on their own might.

It is one of the many objections to proposals for World Federation, like that of Clarence Streit's *Union Now*, that they envisage a drastic reorganisation of the world, but it must be by the "right people"—meaning America, Britain, and possibly also other allies regarded as coming within the description of "the democracies."

But who is to plan the planners? That is the question to which the other countries will insist on being given an answer. In the present state of world organisation it seems evident that this question permits of no final or universal response. If the constituent members are to be on a basis of equality, no system of international or even regional grouping can work unless the economic systems to be grouped together are similar in basic structure. You cannot group cottages and flats in a single structure, or produce a satisfactory building out of a jumble of different materials—lath and plaster, bricks and concrete blocks. In the same way, peasant agricultural structures, plantation estate structures, democratic industrial systems and socialist dictatorships, cannot be welded together in a single world federation.

Besides, many of the existing systems are still in the fluid growing stage—that is, in the process of ceasing to be one type of system and becoming another. In addition, even in the case of countries striving to achieve the same type of economic structure, it is possible to find nations at different stages of progress from infancy to maturity, and, as we know to our cost, it is not easy for nations at these different stages to keep in step. An essential element in planning must be allowance for the fact that the quality of the structure will largely determine the behaviour and outlook of the individual members of the group. Just as a man behaves differently in his home, at his school, in his religious life or as a member of a political party, so will his behaviour vary according to the social or economic system to which he may be attached. Each group has its own tradition, its own customs, its own controls, its own forms of self-expression, and, so long as it remains intact, it will support and guide the behaviour of its members.

As Adolf Hitler most clearly discerned, the quickest way to break down the resistance of the individual mind to new ideas is to break up the groups to which that individual mind belongs. "Without group ties a man is like an oyster without its shell", observes Karl Mannheim. Group ties become stronger the more long-standing and compact the group. Human laws begin as rules of individual conduct to limit the nuisance that particular individuals make of themselves; they end by constituting the pattern and foundation of all social organisation and all government.

It is not true, as many still suppose, that the whole system of law came into being because a few individuals were created superior and a great many inferior, and that the former governed the latter by commanding them to do, or abstain from doing, certain things. Naturally, as the density of communities increases, and the business of living together becomes more complicated, there have to be more and more rules. As the rules become increasingly difficult to administer, it is not surprising that the individuals temporarily in possession of power are tempted to "command" or that, even when they do not command, the ordinary man is driven by the complexity of the rules to imagine that he is in the grip of some ruthless tyranny, instead of rules established by "immemorial usage." He is blind to the larger society. How fixed and determined a society can become, and to what extent it can approach that of the termites and bees in subdivision of function, is seen in the immobile system of the Middle Ages. Economic progress in those days was so slow that society scarcely changed at all in a generation. Migration from place to place or class to class was rare. Most people spent their lives in the groups in which they had been brought up. By the ideals of his Church, his family upbringing and the rules of his craft, a type of man was created sufficiently uniform in standards of thought and action to guarantee a smooth-working, stable society. So strongly riveted were its shackles that it needed many wars and revolutions to break them. Our would-be world planners, who seek a short cut to Utopia, would do well to bear these facts in mind. For aught we know our own economic systems may already be in the process of moving in the direction of a new kind of communal order of the mediaeval type, albeit at a higher level, instead of towards a larger world society based on a still "freer" individualism.

Any and every approach to the question of controlling world population and production must, it seems to me, be conditioned by the human factor. It is on this rock that all grandiose schemes for constructing a new *world* order are destined to founder. Man is happiest when living in small communities, preferably when, like the peasant, he has some form of direct attachment to his native soil. It is one of the advantages of the form of communal organisation discussed in the last chapter that it would be possible to combine with it attachment to the soil without dispensing with that element of mobility and fluidity which the application of modern power-production methods to industrial operations demands. Clearly, however, a rigid and separatist territorial nationalism would not of itself afford a complete solution. Groups must not only not be too small, but they need to have contacts—and mobility—with outside areas. They must be parts of still larger groupings. The problem of combining convenient size with mobility on an international scale bristles with so many difficulties that in the present state of evolution I do not deem it wise to go beyond the general observation made in my earlier book *The Economic Consequences of Progress* that, “apart from sentiment, there is no reason why, after a period of experiment, the peoples of the world should not organise themselves into a series of self-sufficing groups or areas, linked together internationally by agreements covering, on the one hand, branches of world industry in which capacity will normally tend to be in excess of demand, and on the other, raw materials of which the world supply is localised. Each group or area would eventually in effect become a vertical cartel” (that is, a “communal” unit of the type discussed in Chapter XV of the present book), “its relations with other groups corresponding to those of a member of a horizontal cartel. The present international bickerings in regard to prices, quantities and debts would become a thing of the past. . . International combines made up of the groups I have suggested would, one may presume, centralise research and hold patents in common and therefore be able to exercise control over the world-wide dissemination of output and productive capacity. In addition, each of the individual national productive units in any territorial group would be working under an industrial system which would possess considerably more national and international mobility in personnel than any of those operating to-day. The

functional grades into which the personnel would probably be organised would be in personal touch with their opposite numbers elsewhere. Members of the higher technical grades might regard themselves more as an international service than as owing special allegiance to any particular national section of their group. Under an industrial society thus organised, whole branches of industry might, when need arose, migrate from one place to another. This would be an organised process, not a haphazard happening as obtains to-day."

If the different economic regions or systems were really *separate* and their essential imports and exports budgeted for ahead on a planned long-term minimum value or "bulk" purchase basis, it should be practicable to arrange for the *free* international interchange of such things as patents and designs, new inventions, innovations and services in much the same way as the results of pure scientific research circulate freely among world scientists to-day. In the new condition there could be no such thing as outbidding or getting ahead of one's competitor in the world market; for there would be neither a world market nor any international competition in the present sense, nor unrestricted dealings in foreign exchange. Under such a system, unwanted—or unplanned-for—domestic surpluses could no longer be sold abroad freely on a cash basis. They could as a rule only be given away or exchanged on a barter basis for other similar surpluses; their relative exchange values would vary in accordance, not with their scarcity, but with the extent of their superfluity—their nuisance value! Thus complementary international trade and exchange would be resumed, but at a higher level of organisation, cleansed of much of their present competitive and discord-producing qualities without detracting from their mobility and efficiency.

The development of commercial air transport facilities after the present war should facilitate international mobility of this kind and also help to bring nearer to the stage of practicability another proposal made in my earlier book (pages 212–213), namely, the establishment of "international public services" to provide non-industrial areas, possessing few commodities capable of international interchange, with planning-personnel and staffs, together with a limited quantity of equipment on what we should nowadays term Lend-lease principles. The international aspects of such questions as

migration, communications, social services and security might be approached along similar lines.

The linchpin of such arrangements would be open recognition that the national idea provided the only practicable basis for world fellowship and peace at the present stage of evolution of human societies. I am, of course, aware that, according to current official American and British ideology, such ways of thinking are to be deemed retrograde in the extreme; but there are many in Europe who view matters differently. They are far from satisfied that large units built up on the international idea and free individualism can bring peace and contentment to mankind. They point, for example, to Switzerland and to the position before the present war of the small Scandinavian nations—which had even reached the stage of running a common interchange of social services on a reciprocal basis—as illustrations of how the creative force of nationalism can breed peaceful, happy and prosperous communities, even under conditions of relative poverty of natural resources.¹ On the other hand, the sorry plight of the U.S.A. in the decade from 1929 to the outbreak of the second World War has demonstrated conclusively that “internationalism” in the sense of free individualism and an absence of political and economic barriers over a vast continental area, even when coupled with a wealth of natural resources and power beyond the dreams of avarice, does not necessarily do so—and perhaps cannot do so. Is it just a coincidence that the most hopeful line of approach to the solution of America’s intractable pre-war unemployment problem was thought by many to lie in the creation of a number of more or less self-contained local river valley communities along the lines of the Tennessee Valley experiment? I wonder. Be that as it may, I do not doubt that further experiment will be made in the above

¹ Those who look with disfavour on the idea of small nations and assume without question that anything short of a direct leap from the individual to the international idea is retrogression are invited to ponder carefully the following dictum by that shrewd student of history, H. A. L. Fisher: “Almost everything which is most precious in our civilisation has come from small states—the Old Testament, the Homeric poems, the Attic and Elizabethan drama, the art of the Italian Renaissance, the common law of England. Nobody needs to be told what humanity owes to Athens, Florence, Geneva or Weimar. . . . The quantitative estimate of human values, which plays so large a part in modern political history, is radically false and tends to give a vulgar instead of a liberal and elevated turn to public ambitions.” *The Value of Small States* (1915).

directions—but it is unwise to attempt to particularise at the present stage. Experiment is likely to yield especially fruitful results in primitive areas such as are to be found, for example, among Britain's colonies and dependencies.

For a number of reasons it may be wise both to contemplate and prepare for a change in the relations of mother countries like Great Britain with their colonies. The British Empire has long since ceased to be an Empire in the sense in which we speak of that of Rome and many others of the past. It consists of a vast assemblage of states and territories in all stages of development, some independent and fully self-governing, some in the process of attaining full liberty, and others in various intermediate stages on the road to freedom. After the present war the Dominions will operate as self-governing nations, complete masters of their own destinies. What is to be the future of the Colonies? While it may be found inexpedient to disturb existing relations immediately, the pressure of economic necessity is likely, as it has already done in the case of industrial units within the separate nations, to force a grouping into larger units, both for more efficient administration and the development of larger-scale policies. General Smuts, for example, has suggested that all British Colonies in the West Indies, in the Far East, and on the African Continent respectively, might be grouped together, and larger powers assigned to these regional groups with a corresponding decrease of power exercised in London. While the Mother Country would, for the time being, continue to be primarily responsible for the administration of her Colonies, ultimate control of general policy would rest with the regional councils, on which might also be represented others regionally interested for security or other reasons, such as, for example, the United States in the case of the Caribbean Sea and West Africa. This arrangement, of course, would be only an intermediate stage in the passage towards complete independence. But meantime we need to discover much more about the practical rules governing the construction of stable human societies.

Some of the obstacles that are likely to be encountered can be illustrated by examining one of the immediate problems of economic reorganisation of this sort with which the world will be faced at the close of the war—the Mid-Eastern European region between the Baltic and the Adriatic and the Black Sea—Poland, Hungary, Bul-

garia, Yugoslavia, Slovakia and Rumania. This is Europe's frontier. The organisation of this vast region will determine the future status and functions not only of Germany but probably of Russia as well—and whether there is to be peace or war in Europe. It was the failure of the Versailles-created organisation of this region that gave Hitler his opportunity. This region contains the only rapidly growing populations in Europe outside Russia, and seventy-five per cent of the people are still peasants.

How fast population has been growing in this region will be realised when it is remembered that, at the beginning of the twentieth century, it was less than a sixth of Europe's total. By 1939, it was a fourth. During the past twenty years, while the population of the West has tended to stagnate, it has increased here by almost twenty-five per cent. According to a recent study: "As a group, the one hundred million peasants in the Mid-East already outnumber both the Anglo-Saxon-Scandinavian group and the Germans; and in another twenty years they should outnumber also the Latin people and should have become the largest single group in Europe, outside Russia!" The trouble about this region is that it is almost entirely unorganised in the modern sense. Until the middle of the nineteenth century, Austria-Hungary and Turkey kept it shut off politically, economically and socially from the main stream of European development, in a state of semi-tribal isolation. Any native who wanted to escape this isolation had first to give up his national identity and become a German, Hungarian or Turk.

The "Little Entente" after the first World War was the first systematic attempt to make these peasant states an integral part of Europe by organising them on "European principles." But "European principles" meant liberal democracy and industrial capitalism. And these could not take root because, for one thing, the soil had not been prepared. In many respects the social and economic organisation of these regions was still in the mediaeval agricultural stage, that is to say, the word "democracy" meant something quite different from what it does to people living in an industrial age. Besides, the traditional enmity between town and countryside was still an active force. The peasants realised, and the Russian experiment confirmed, that the adoption of an "industrial" type of democracy meant, as it did in the case of England in the eighteenth century, the destruction

of the countryside with all its immemorial customs, traditions and ways of life, and the substitution of an urban and industrial structure. This is not what these countries want. An overwhelming proportion of the people are owner-farmers. After the last war, the social structure was levelled still more by the expropriation of the big land-owners everywhere except in Hungary and East Poland. The Mid-Eastern peasant believes firmly in the private ownership of land and is opposed to the concentration of wealth and the idea of making money the yardstick for the whole of economic life. His pattern of life is essentially a tribal agricultural pattern. This is what he means by democracy. His ideal is local self-government in political, economic, religious and social affairs. He is, thus, entirely opposed to centralisation on a national basis—an essential prerequisite to the establishment of an industrial capitalist state. Anyone who has had the misfortune of trying to make the local authorities in an advanced country like Britain take a national view of their problems will appreciate how strong that feeling can be! Nationality in peasant Europe has thus been a factor setting men apart instead of uniting them.

This difference was well exemplified in the case of post-1918 Czechoslovakia. The Czechs, who traditionally and culturally belonged to the West, adopted the principles of Wilson's Fourteen Points and built a strong, orderly nation upon this foundation. But in Slovakia, which belonged traditionally and culturally to the peasant East, the same principles failed completely. The Slovaks repudiated national democracy and industrial capitalism, just as vehemently as the Czechs accepted them. To a peasant who measures his wealth in tangibles like land and gold, the creation of a mass of landless workers is anathema. The peasant will, of course, gladly accept factory work in lean times, but not as a permanent condition if he can avoid it.

These peasants were caught by the present war in mid-stream. With the exception of Hungary, they had lost the old type of nationality based on a semi-feudal oligarchy of "great families" with large estates, and they had not had time to build up a type of nationality based on industry or some other foundation. A national industrial democracy presupposes an industrial class—the so-called "middle class"—and the mentality, habits and convictions that go with it.

But before there can be an industrial middle class, there must be an industrial system, and, judging by experience elsewhere, that industrial system to be effective in this direction must have progressed to the point of making agriculture and the agricultural form of life subordinate to it, at any rate in the region where it operates. Not surprisingly, the attempt to hasten this industrialisation after the last war was deeply resented by the peasants. The help given to this revolution by their rulers was regarded as treachery, and so strong was the reaction that in most countries industrialisation could be carried through only by the assumption of dictatorial powers. These dictators, with their retinue of court officials, bureaucrats, bankers, and industrialists, were, according to Peter Drucker, to whom I am indebted for much of the above information, regarded as "as much foreigners in their own country as the Lombard bankers were in mediaeval England." Perhaps, had there been no war, the rulers of these peasant countries might have succeeded in developing a sufficiently strong middle class to support the national States. Certainly the growth of cities in the peasant countries during the past twenty years has been phenomenal. But there has been that unfortunate snag—over-population.

The countries of Eastern Europe, as we observed just now, are not only among the poorest, but are among the most over-populated in Europe. Up to 1914, the pressure was reduced partly by the growing market for their produce in Germany and partly by emigration to the expanding New World overseas. The first World War killed migration, and the competition after it from the overseas wheat-producing areas brought down prices to a level at which the peasant producers could not compete. The world economic collapse of the early 'thirties completed their ruin. The long-term contracts at stable prices subsequently placed by Germany did something to alleviate their situation. Nevertheless, according to competent observers, it remains true that the standard of living of the peoples of Mid-Eastern Europe fell after the first World War and had not recovered by the time the second began. And, as if the position were not already difficult enough, millions—literally—have been uprooted, scattered and temporarily reorganised into new patterns in the course of the present conflict.

How is this problem to be dealt with? It is generally agreed that

the Mid-East is one of the most densely populated agricultural areas of Europe and that the individual farms have been divided and subdivided through generations to such an extent that they have become too small, not only for efficient production but in many cases for the maintenance of the subsistence farmer and his family.

Experts have long maintained that one-third to one-half of the agricultural population ought either to emigrate or find employment in industry. It is not easy to see how either of these remedies is to be applied. The New World overseas is apparently closed to them and there is nowhere else for the migrants to settle. Besides, their home areas are too small to sustain developed industrial systems of the modern type. There is the added difficulty that in Germany, Italy and Russia, there will doubtless exist after this war ample manufacturing capacity to supply the industrial needs of these populations. This means that in so far as population pressure among the peasants in this region is relieved by placing some of them in industries specially set up for the purpose, it will exacerbate the unemployment problem of the already industrialised neighbouring nations. This problem is, of course, by no means confined to the Mid-Eastern European region, but is the central issue in many other regions of the globe, including India and certain British Dominions and Colonies.

The solution for the Central European region, under the blue-print of the Nazi European Empire, was for these countries to be incorporated in a self-sufficing continental economic system. Every part was to be reorganised to produce the goods which it was best fitted to produce and which were most needed in Europe. International division of labour within Europe was thus to be established, a result which nineteenth-century Liberalism had failed to achieve. The whole of Europe was to be divided into four zones, and the Eastern European zone was to be given the role of main supplier of Europe's needs for cheap mass-produced industrial goods.

Much scorn has been poured on this German plan. But it needs to be appreciated that those who wish to see the full potentialities of the machine age realised can obtain their wish only through the adoption of some large-scale plan of this kind.

In any event, the above plan must be treated as something more than a fantastic Nazi dream. Its roots go deep. It is an attempt to re-acquire the pre-Hanseatic basis of life. Its supporters argue that

during the past three hundred years, Western Europe—Britain, Holland, France and Belgium—with Germany in its train, has turned its back on the continent of Europe and based its economics on the establishment of a “new Europe” in the New World opened up across the ocean. That age of overseas expansion has now come to an end. There are no more new lands to exploit, and the overseas regions that used to encourage European migrants and imports tend to supply their own needs locally, and in general are developing economic programmes and structures which must prove fatal to the type of international division of labour on which the wealth of Britain and Europe was built up in the nineteenth century.

There is, accordingly, a good deal to be said, at any rate in theory, for a plan which insists that Europe should return to what should perhaps always have been its primary concern, the development of its own living-space and economic relationships on the continent itself.

Professor C. W. Guillebaud has summed up the Nazi plan not unfairly in the following words: “The Nazi scheme must be rejected not on the grounds that it is unworkable, nor that it is fundamentally unsound economically—parts of it may come to be adopted later in modified form—but because it is based on a one-sided German hegemony over the whole of the Continent of Europe, which would be unendurable.”¹

Now, as will be clear to anyone who has followed the argument of this book, the danger of all such large-scale schemes is that, unless their elements are kept together by fairly rigid regimentation and dictatorial control, they must in the end break down into their constituents much in the same way as did the British “international” system of the nineteenth century, of which it would in a sense be a smaller-scale copy. How much more hazardous therefore must be any attempt to build a single world order at the present stage of the world’s economic evolution.

The realist must surely find something ironical in the picture of two countries, Britain and the United States, both suffering before the present war from approaching population stagnation, endemic unemployment, and persistent economic frustration in their own home areas, combining to lead a crusade to put the European

¹ *Economic Journal*, December 1940.

economy in order. It may be magnificent wartime propaganda, but is it practical statesmanship? For one thing, politically, the U.S.A. is hamstrung: an undertaking given by the administration of to-day is not binding on that of to-morrow—a circumstance apt to be overlooked by those who allow their reason to be captivated by pseudo-scientific world planning of the Wellsian kind. Besides, in the actual event, surely Russia will have the decisive voice. When the war ends the Russians are almost certain to have a preponderance of military forces in Europe, and there are no grounds for supposing that the Red Army, if it frees these people from their Nazi oppressors, will permit governments operating in London and Washington seriously to interfere.¹ Just as in the second half of the nineteenth century onwards the economic potential of France declined relatively to that of a unified and industrialised Germany, so after the present war Germany's must decline relatively to that of a unified and rapidly industrialising Russia with a population more than twice as great as that of Germany and expanding rapidly relatively to it, and with a far greater wealth of unexploited natural resources. The question then will be, as Walter Lippmann has observed, not how firmly America and Britain can guarantee the independence of the Central European States, "but whether Russia will permit them to exist at all as independent states". The fact is that the United States economy after the war will be too mature to join in a system of expanding complementary *interchange* with Europe to any much greater extent than before it. But this is not understood. All that the American business man knows is that the American market is no longer large enough. It has been supersaturated with goods of various kinds since 1929; to get rid of them in future the traditional battle-cry is again being raised: "Make way. We are the people!" The purpose is to make the new economic frontier of America the world; and for this purpose it is necessary to invade and destroy the economic systems of those already in occupation in the would-be importing countries. Like the Red Indian, the American forest and the civilisation of the South, anything that blocks the way to the continuing expansion of

¹ "It is not possible for the United States, and therefore it will not be possible for Great Britain either, to impose and maintain a settlement in this region by military force. Our power is on the sea and in the air, not on the land, and our interest in the interior of the European continent is indirect." (W. Lippmann, *U.S. Foreign Policy*, p. 91.)

Northern American individualism must be destroyed in the ruthless manner so graphically described in James Truslow Adams' *The Epic of America*.¹

What is going to happen when this experiment has been tried and failed? My guess—and it is only a guess—is that the world will revert to the ideal of moderate-sized, approximately self-contained units and groups, and that instead of a single multilateral arrangement there will be a series of regional blocks or “clearing unions”, e.g. a sterling area. The trade of these blocks with the rest of the world will be quantitatively controlled in order to prevent their domestic levels of employment from being depressed by economic fluctuations in non-member countries. This way out will become more acceptable as soon as it is generally realised that it is internationalism rather than nationalism that has been the cause of most of the world's troubles. It is the spirit of “internationalism”—the urge to grow larger, to become richer, to occupy more territory—that has infused nationalism with that inflammatory quality which has so frequently led to international discord and war, in the manner so vividly described over 2000 years ago in the second book of Plato's *Republic*. This applies to goods as well as people. Remember, it was the internationalism of the nineteen-twenties that was responsible for converting in the nineteen-thirties what otherwise might have been not much more than a local trade depression, centred in the U.S.A., into the world-shattering economic cataclysm that played such a leading rôle in precipitating the second World War.

This has not been appreciated because the practice has grown of using the word “international” in two different senses. In the first and more theoretical sense it means a world without separate

¹ Under the influence of war-time propaganda it has been forgotten that the primary aim of Mr. Cordell Hull's pre-war foreign trade agreement policy was to relieve American over-production by providing “expanding markets for the products of the U.S.”—to quote the preamble of the Trade Agreements Act—not to promote *world* trade expansion. Mr. Warren Lee Pierson, President of the Export-Import Bank—created and owned by the Government of the United States—has recently (July 1943) put this policy even more bluntly: “The industrial machine of the United States has grown too big to be healthy in its own backyard . . . to utilise its capacity at a profit or to give full employment to our people if it is limited to producing for the domestic market. We believe, therefore, that American industry must . . . take advantage of the demand for its products overseas.” This policy is certain to be intensified when the post-war reconstruction slump matures.

nations; in the second it means a collection of nations, each of which maintains itself as a nation but has international offshoots, or operates as did the so-called British "international" system of trading in the nineteenth century. This latter system was able to employ the cloak of true internationalism to clothe what was little more than an endeavour to make use of the subtleties of the so-called theory of international Free Trade to rivet permanently the purely temporary state of inferiority of various overseas areas which had not yet attained the stage of industrialisation. In short it was an attempt to perpetuate the superiority of Britain, the first country to have the good fortune to become fully industrialised. Free Trade assumes a *static* system in which natural advantages are fixed once and for all. But the economic world is not a stagnant pool; it is a flowing river with an ever-changing shape and course.

That we can eliminate nationalism in the near future I simply cannot believe. Surely D. W. Brogan is nearer reality than the Liberals when he insists that "The great, living, driving force of the contemporary world is nationalism, the violent, irrational, overwhelming resentment of the invader that has animated the Dutch, the Poles, the Greeks, the Russians—and the French—as it animated the Prussians in 1807 and the Germans in 1923." I see no hope of enduring peace over any substantial section of the globe until the leaders of world opinion openly recognise and accept this truth.

After this war nationalism is more likely to grow than decline. For example, Canada, Australia, New Zealand and South Africa may continue to live under a common Empire umbrella with Britain, but they will in fact be masters of their own destinies, except in so far as they allow themselves to be drawn into the orbit of America. One of the curiosities of the British Liberal mind is the way in which it blinds itself to the fact that in practice such things as a *national* housing policy, a *national* employment policy, a *national* security policy, and a *national* investment policy in home affairs are quite incompatible with true *internationalism* and freer world trade. It sees nothing inconsistent in maintaining that a policy of "full" employment at home should have priority over exchange stability (i.e. honouring one's country's external obligations) and at the same time advocating, as in the Keynes international clearing proposals, that the

solvent for the world's loss of economic elasticity is more lavish international investment and lending by creditor countries!

Capitalism was the escape of the individual. Any "new order" that is to take its place, if it is to help forward the advance of mankind, must, so it seems to me, provide for the escape of the community—the nation. How exactly this will happen I do not know, but I have hinted at a possible way out on the production side in the previous chapter. The answer will be worked out in action, not on paper. There will be many experiments and many mistakes. We shall learn as we go by the process of trial and error. It will not be an escape to some nineteenth-century Utopia. That avenue surely is, in any case, closed. I agree with Laurence Dennis when he says: "Individuals formerly could escape to America or to the Upper Classes. People in the mass cannot escape any longer anywhere. They have to stick it out more or less where they are." This does not mean that there may not have to be considerable migration; in particular, large-scale migration from the British Isles would appear desirable from many points of view, and especially if the centre of gravity of the British Empire should move after the end of the present war.

But migration cannot provide a *world* solution or a permanent solution. This means that the bulk of the people will have to make up their minds to stay where they are and make the best they can of their existing environments. This is the only hope of world peace. I admit that to do this successfully would require as great a revolution in ideas as did the first adoption of individualism in its day, and to reach stability would take, if not as long, a very considerable period. A change of heart—a new activating principle—is the first essential. Without a vision the people perish. Economic progress must cease to be an end in itself; "economic man" must cease to occupy the centre of the stage; there must be a different objective and outlook, and a new type of thought and leadership must emerge with it. We must get rid of mass society by splitting it up into smaller groups within which, like the atoms within a protein molecule, there will nevertheless be scope for individuality and personal freedom. Until the new spirit emerges, there will have to be planning—that is, some regimentation. This seems now inevitable: but it has needed two World Wars to drive the lesson home.

The governments of most of the Western nations are committed

to experiments in forms of nationalisation and State control in a number of directions after the present war. But State Socialism, to adapt a famous phrase, is likely to prove to be but the ghost of capitalism sitting crowned on the tomb thereof. The State, which already takes the bulk of the available profits of private industry, will find itself faced with the uncongenial task of endeavouring to find employment for all those at present engaged in a number of moribund industries, at rates of pay which can only be met by "soaking" either the taxpayer or the consumers of the finished product. In its anxiety to avoid causing unemployment it will be inclined to place an even more rigid embargo on the introduction of new inventions and labour-saving appliances than private enterprise has ever ventured to do.

Obviously, this can at best be a temporary phase only. The next stage may perhaps include further experiments with communal systems of production—individualism at a higher level of organisation. The only test then would be: which is the best scientific method of production to employ? Let us be clear that to place certain sections of production under communal direction need not mean that, when men had got used to it, they would necessarily feel that they had been deprived of any vital right or of any important element of individual freedom, any more than they do to-day, when they are deprived of any personal control in such matters as the water supply, the roads or the army and navy.

An American newspaper correspondent, Walter Duranty, has recorded his amazement at finding that the present-day Russian does not envy us our freedom in this respect. "It is one of the strangest things that the average Soviet Russian honestly believes that the system under which he lives, which we consider a tyranny, or dictatorship or totalitarian regime, or anything save freedom . . . is freer than the 'plutocratic oligarchy' (as he terms it) under which he says the British and Americans live."

When I speak of the "production problem," I do not necessarily mean *all* production; only that part essential to a satisfactory communal life may need to be controlled. Outside this, the freest rein might be given to private production and enterprise—that is to say, in all non-basic industries, services and occupations. My suggestions refer primarily to that part of the national output that will in any event

sooner or later be subject to mass-production methods and large-scale organisation, and so is likely even under an "individualistic" system to become increasingly regimented and centrally controlled in future. These industries would be the only fixed points in what otherwise might be an extremely mobile world. As the war has demonstrated, most of the work in the controlled occupations could, if desired, be carried on largely by the old and those preferring a settled form of life, leaving the young free to embark on new enterprise. In the main, modern technical methods demand not skilled craftsmen, except in small numbers, but what has been termed "standardised, freely interchangeable atomic labour, without status, without function, without individuality." This has largely taken the place of the traditional craftsman, who nowadays prepares the job but does not carry it out. It is for men in this latter class that new opportunities for the exercise of skill and initiative would have to be found, once the problem of distributing basic necessities on a communal basis had been solved satisfactorily.

As there would no longer be any need to subordinate all social activity to economic activity, the individual could be given a place and standing in society quite independent of the particular economic process he carried out. Social standing could be based on non-economic considerations, or other objectives might be used to offset them, just as decentralisation and local self-government are now employed to offset over-centralisation and bureaucracy in public affairs. The new attitude can, perhaps, best be described in the terms used to distinguish the approach of the man of science to his problems: "In Science men have learned consciously to subordinate themselves to a common purpose, without losing the individuality of their achievements. Each one knows that his work depends on that of his predecessors and colleagues, and that it can only reach its fruition through the work of his successors. In Science, men collaborate, not because they are forced to by superior authority or because they blindly follow some chosen leader, but because they realise that only in this willing collaboration can each man find his goal".¹

True freedom is the recognition of necessity. But to displace economics from the central position will not be enough. We must, in addition, get rid of the disillusionment which has followed the

¹ J. D. Bernal, *The Social Function of Science*.

discovery that you cannot contrive a society in which there are no inequalities of rank or station or wealth or power, and in which the happiness of all can be automatically achieved by each pursuing his own happiness. To begin with, equality is impossible in any complex group. Any complicated organisation must be hierarchical, must have important and unimportant people. How then can the ordinary man be rid of this feeling of inequality? A. D. Lindsay has suggested that a key to the solution is the recognition of two principles: one he calls the principle of the common life, and the other the principle of compensating inequality. A common life implies not only the assurance of a minimum standard of life, but the sharing of a common life of the mind and social life generally. For this to happen there need not be equality of incomes or of functions. The principle of compensating inequality is the production alongside of economic society of another society or series of groupings, in which economic values are ignored and other values introduced. "Thus we shall over against the secular hierarchy of economic power and place have another society proclaiming different values and giving scope and pre-eminence to other qualities."

What form this compensation will take in the future it is not for me to forecast. But to-day we have many examples in sport, art and religion of hierarchies in which the individual can find himself recognised as a distinctive personality, enjoying an opportunity of uniqueness in which purely economic valuation plays no part. Naturally, should industry adopt a form of what I have termed "communal" organisation, similar outlets could be provided via its regional, local and factory organisations. The important thing would be to concentrate on creating *small* harmonious groups of all kinds, everywhere, to be used as bricks out of which would be built up the larger national and international communal groupings.

But, as I said earlier, it seems to me that first there must be a deep-seated change in man's attitude towards life, something that will not only teach him to look at life in a new way, but will provide a new activating principle. And before that new principle can bear fruit its seeds will have to be sown in the hearts of the very young.

In every generation there are always a few bold and adventurous spirits who object to living in security. They feel the urge to expand, to do something worth-while, to take the world a further stage along

the road. It is from these that have emerged the *élites* who have set the pace and founded new orders of society.

When the European order collapsed in the thirteenth century, owing to the disintegration of a society based on the concept of "social" man, it was replaced by one founded on "individual" man. It was this that, in the sixteenth century, developed into an order built up on "industrial" man. This new order took many years to establish itself, and its progress was punctuated by many discontinuities. The emergence of "industrial" man, with his political counterpart the Liberal rationalist, illustrates the revolutionary quality of transformations of this kind. "Whereas in the Middle Ages the idea of acquiring wealth was limited by a body of moral rules imposed under the sanction of religious authority, after 1,500 years those rules, and the institutions, habits and ideas to which they had given birth, were no longer deemed adequate. They were felt as a constraint. They were evaded, criticised, abandoned, because it was felt that they interfered with the exploitation of the means of production. New conceptions were needed to legitimise the new potentialities of wealth that men had discovered little by little in preceding ages. The Liberal doctrine was the philosophic justification of the new practice."¹

The new practice led in due course to the establishment of new sets of hierarchies and *élites* based on different values and qualities from those of the groups displaced. To begin with, the leaders of nonconformist sects who laid the foundations of capitalism in the seventeenth and eighteenth century were held to be of no account in the hierarchy of the society of their day. Like the Calvinists, they compensated for this by having an "elect" of their own. The Puritans, who helped to lay the foundations of the new capitalist world overseas, provided seventeenth-century England with a network of such societies to which only the chosen might belong, and their movement was carried forward by the Wesleyan revival of the eighteenth century and in the nineteenth by the nonconformists. The successors of these last in the twentieth century, although they also regard themselves as the forces of progress, have in truth become the forces of retrogression. They are about to be submerged by the forces of State Socialism. But quite apart from the reasons

¹ H. Laski, *Rise of European Liberalism*.

already given, it is not to be expected that State Socialism will bring relief. For it starts where Liberal democracy leaves off. Under it, industry will continue to produce much the same things as before—and in the same order; the only important difference will be a more equal distribution of spending power and opportunity.

It involves no new attitude to production or to life. Human needs will continue to be assessed in terms of “consumers’ choice”: the “unyoked humours” of desire. The pursuit of luxury will still be the primary objective—the greatest number of goods available to the greatest number of people, regardless of their worth. There will be no change in the quality of life. It will continue to regard man primarily as a consumer. His wages will be raised in order that he may consume more, not that he may live more abundantly at a higher level of values. Those not fortunate enough to belong to the rising wage-scale services and industries—the scientist, the artist and the professional worker—will have to meet the cost of these increased wages in the higher prices they have to pay for all the services and other items in their expenditure, such as rent, of which wages form a substantial part. And their work will suffer because the theory of mass-production breaks down when applied to the things of the mind. This will continue until the world learns that to build bigger is not necessarily to build better. There is a point when quantity may become a menace and the law of diminishing returns begins to operate. This is not true of quality.

As I have already implied, I incline to the view that the progressive countries of the world will seek a way out of this impasse in a fresh adventure of living. The aspirations of man’s spirit will enable them to pass unscathed through the fires of revolution that lie ahead. While those of us who belong to the old dispensation may feel borne down by apprehension of the things that are to come, our exhortation to the young should be: “Let not your heart be troubled, neither let it be afraid.”

CHAPTER XVII

THE CRISIS OF CIVILISATION

Meantime, "economic" society from its sick-bed cries out for an immediate remedy. But for it there is no remedy. Its system of civilisation, having outgrown its convenient size, has broken down. That breakdown has reached such extremes that all hope of saving the existing structure must now be abandoned. Man is once again facing an unknown future. If he would accept this, he might be able to view the decades that lie immediately before him without undue alarm. Given mutual trust and a recognition that a journey into the unknown is beset with difficulties and dangers, that mistakes must be made and suffering endured, then those whose responsibility it will be to embark on the experiments that must be made might reasonably look for understanding, sympathy and fair play from those who will perforce have to be guided by their endeavours. This attitude may be summed up in the words once used by Father Tyrrell to describe the early Christian view of the world:—"Proximate pessimism combined with an ultimate optimism." But the glory of the resurrection presupposes the miseries of the crucifixion. This is where the danger lies.

Unfortunately, not only is there no general admission that recovery is impossible, but strong vested interests exist in support of the contrary view. Practically every international pronouncement on economic matters, made before or since the present war in the "democratic" countries, has been vitiated by the assumption that there is some "solution" or "plan" which, by a suitable balancing of *existing* interests and ideas, can be made favourable to all and prejudicial to none. These vested interests are not those of capitalism in the economic sense. They are those attached to individualism and the structure of ideas usually referred to as Liberalism. They are the intellectuals, without direct responsibility for practical affairs, who, to justify their own existence, feel compelled to assert that human reason is absolute, that error is only another name for a refusal to do what is known to be right, necessary and good. They are the

politicians who ignore that humanity is imperfect because man is still in process of evolution; that the future is unknowable because life is an experiment—a leap in the dark; that man must be satisfied to understand and use what he has and to know that just as the present has always started from the past, so the future will emerge from the present. In sum, they comprise the upholders of the group of ideas that has provided the background for our national thinking for some three centuries. Under their influence the common man has come to believe that all that is needed to produce the millennium is still greater equality of opportunity and such an improvement in the system of education as will lead to reason being enthroned in the place of emotion as the governing principle. By this means, the “right” men will be given the opportunity of taking charge and a “new order” established. Scientific individualism is to be our ruler. This is a long way from the old Greek idea that made the subordination of the individual to the State the keynote of all its political and economic ideas. Greek thinkers started from the group, the State, and from this worked down to the individual; that is to say, they approached their problems in the opposite way to the modern Liberal philosopher. Plato was at one with modern reformers in insisting that social solidarity could be achieved only by eliminating both the plutocrat and the beggar. But how it was to be attained Plato was honest enough to grant was extremely difficult. Confiscation is no better than a temporary expedient. The only real and lasting cure, he urged, must be a complete moral change by means of some form of long and patient training. So little faith had he in the power of “reason” that he proposed, like the Russians in their recent revolution, to get rid of all the people whose minds were not amenable to new ideas and concentrate on the children.

It is all very well for present-day thinkers to urge that what our modern rulers mainly need is a kind of scientific “brains trust” to guide them. But what guarantee have we that its judgements would prove more practicably sensible than those of the political advisers whom, one must presume, it would override or displace? And then who is to plan the planners? Plato, I feel certain, would have appreciated the crisp observation of Wilfred Trotter that “Nothing is more flatly contradicted by experience than the belief that a man, distinguished in one or several departments of science, is more likely to

think sensibly about ordinary affairs than anyone else. It is all too easy to select only those facts which fit some conclusion arrived at already through interest or feeling. To the eye of the psychologist the intellect has shown itself to be, after all, no more than a human organ, with preferences and caprices like the stomach and kidneys. . . Every structure of argument it builds, however massive and symmetrical it may look, rests on foundations from which it has no means of excluding disturbance by bias and preconception. Under the attack of this kind of knowledge there can be no doubt that sooner or later the supposed independent validity of reason must go down. . . All we can do is to suspect the grosser cases of the effect of feeling and endeavour to make an appropriate correction. Even so there are many emotional states of which the action may be so deeply masked that it is impossible to detect them at work by direct observation; so that when we may imagine we are taming them perhaps all we are doing is to make them more insidious and more treacherous."

Bergson goes further and asserts that "The intellect is characterised by a natural inability to comprehend life . . . we are at ease only in the discontinuous, in the immobile, in the dead."

Besides, science itself has in recent years been rendered less, rather than more, fitted for such a task by its increasing specialisation and sectionalisation. A century ago, a moderately gifted individual might acquire a reasonably comprehensive view of what could then be termed natural philosophy. To-day there is no natural philosophy, only an ever-increasing number of sciences, each with its own set of specialists concentrating on an ever-narrowing field of vision. Each specialised branch has its own particular vocabulary and jargon and thereby erects an ever-growing barrier to the understanding of its results, not only by the intelligent non-scientific seeker after truth, but even by the scientists in the other branches, with the result that, as a recent writer in *Nature* has observed: "Science is suffering along with the rest of mankind from the curse of Babel." Before, therefore, scientists can claim the right to plan a new world order, they must first plan science itself by organising its various departments to the point of making possible effective co-operation between them.

But a point of equal importance, usually overlooked by nearly all would-be world planners, is the necessity of knowing something

more than is known to-day about the principles and rules which govern the social and economic organisation of the groups of human beings of which the new world order will be composed. The problem of organising stable human groups, even in Europe, is as far off solution as ever. On the other side of the world, countries like India and China are striving to compress within a few brief years many of the movements and transitions which, in Europe, occupied centuries and, even at that slow pace, caused vast turmoil and confusion. Whatever the result of the present war, we have no grounds for anticipating that the decades which follow will see the early attainment of an international Utopia.

On the contrary, everywhere we have witnessed a loosening of the bonds of government and the advocacy of reckless policies. Democratic principles are being abandoned. To-day serious internal disension in the so-called democratic countries is being held in check only by the vital need to combine against the common enemy. Let us not forget that the cause of the failure of democratic France was the failure of a nation's will, not the wickedness of a few men. A particularly ominous symptom, especially in advanced countries, is that, as in pre-war Germany, their universities nowadays produce far more graduates than can be accommodated with as full a life of opportunity as that enjoyed by their predecessors. This is part of the "structural" breakdown of our present civilisation.

A development parallel to the progressive redistribution of income and amenities between rich and poor has been the progressive redistribution of the opportunities of education—a proletarianisation of the intelligentsia—and this has both encouraged an overproduction of "intellectuals" and accelerated the process whereby the condition of the individual is being improved at the expense of exterminating the race.¹

¹ The decline in the size of the family has been an essential feature of this process. Parents who had many children to provide for could not spend so much on the education of any one of them, and those who wanted their sons to go to the university restricted births. K. Mannheim, who has studied parallel developments on the Continent, points out that nearly 50 per cent of the German students used to come from small families with one or two children, about 25 per cent had two or more brothers or sisters, and only the remaining 25 per cent had four or more brothers or sisters. (*Deutsche Hochschulstatistik*. Vol. 12, 1933-4, p. 21. Berlin, 1934.)

The break-up of the world into self-sufficing national States has, as in the

The short cut to the glittering prize of success for many has seemed to be the ladder of education. For nearly a century, a University degree has been the means of bringing within the reach of whoever has been able to attain it the choice between the assured security of a career in the higher Civil Service and the opportunity of competing for one of the many positions of rank and opulence open to those admitted to membership of one or other of the learned professions—as well as an entry to many public appointments in the world of affairs. It has sometimes even helped in the business world! Thus the past half-century has witnessed a steady increase in the number striving to secure a place among what is sometimes referred to, collectively, as the “administrative” class. A good degree or high place in the examination lists has been the objective of learning, not education in the sense of knowledge and culture. It is not surprising to find that, with a stagnant population, congestion has made itself increasingly felt in the various ranks of the administrative class also, both in the sense of the failure of new jobs to grow as fast as the number of applicants for them and in the gradual decline, under the

economic sphere, led to the production of unwanted surpluses in this case also. Mannheim, reporting on the consequences for the professional classes of the rise of the new national States after the breakdown and splitting up of the Austro-Hungarian State says:—“The University of Vienna before the War (1914-18) had trained lawyers, barristers and civil servants for the whole of the Hapsburg territory. After the War, Rumania, Hungary, Yugoslavia, Czechoslovakia, and others built up new bureaucracies out of their own stock, and offered the indigenous middle classes, the peasantry, and urban bourgeoisie new chances of social advancement and of assimilation with the educated class. They encouraged them to speak their native language, to foster a literature of their own, to build a national press and so on. This meant an enormous shrinkage of the market for German graduates from Vienna University. But the adjustment in the market of professions is particularly slow and probably only by the introduction of quotas, legal and other political measures, is it possible to restore the equilibrium between supply and demand.” (Walter M. Kotschnig, *Unemployment in the Learned Professions. An International Study of Occupational and Educational Planning*, p. 33, *passim*. Oxford University Press, 1937.) Kotschnig’s study gives some striking figures, revealing the lamentable state of the overcrowded professions in all countries of Eastern and Central Europe. Summing up the general situation, Mannheim observes:—

“There are more persons on the intellectual labour market than society, as it is to-day, requires for carrying out its intellectual work. The real significance of this over-supply is not only that the intellectual professions lose their social value, but also that cultural and intellectual activity itself is belittled by public opinion.” (Karl Mannheim, *Man and Society*, p. 99.)

pressure of competition, in the relative level of comfort and amenities enjoyed by those in jobs of that class.¹

It has been another case of the impasse reached when more than a certain number of people seek to enjoy the comforts of a stall in a "theatre" of limited size. But this has not been understood by the applicants for seats.

There had thus come into being a class which felt it was without purpose or hope. Imprisoned in the static and stagnant society which its members saw surrounding them, they longed for something more dynamic—more revolutionary. Such a temper recalls too easily for comfort that of other countries in the periods that have preceded great upheavals. As a recent writer has written in regard to India, where this particular problem has become acute of recent years, there ensues "a gradual disappearance of the veneration for the organised state; and an indifference to, or even a contempt for, governing authority. A sense of impending change, and a subtle but pervading belief that an era is nearing its close . . . a questioning of principle and a weakening of the ideas of right and wrong; a cynicism and a levity combined with an often crude enthusiasm for particular objects; these are not safe or reassuring signs in a political society".²

The Gestapo and the OGPU have been the unhappy results of steps taken to check this growing anarchy. Lack of serenity is at the back of these manifestations. "The fringe of the middle class vainly struggling to maintain a standard, together with the mass of the unemployed, have provided the hysteria and the depression which vitalises the totalitarian faiths."

That I am not alone in placing on uncontrolled individualism a large share of the blame for the present economic and moral disorders

¹ An example illustrating this situation in Republican Germany may help to show what this means. The annual excess of supply over demand during the nineteen-thirties was approximately: Physicians, 100-200 per cent; physicists, 100-200 per cent; chemists, 100 per cent. These figures refer only to the annual increases in persons who had just become qualified for these professions, and do not include the reserve army of those unemployed who were already in the professions." Cf. *Untersuchungen zur Lage der akademischen Berufe* (Berlin, 1932-3) (K. Mannheim, *Man and Society*, p. 100.)

² Guy Wint, in *India and Democracy*. A symptom of the same malady in Britain is the steady rise in the last pre-war decade both in the amount of juvenile crime and the gravity of the offences committed, a sure indication of a decline in moral standards and discipline.

of the world, is evident from books such as Nicholas Berdyaev's *The End of our Time*, Karl Mannheim's *Man and Society*, and Reinhold Niebuhr's *Reflections on the End of an Era*, and many others. The story begins with the Renaissance and the Reformation; its last chapter covers the period between the French Revolution and the opening of the first World War in 1914.

There are many indications that we are in the throes of a great spiritual upheaval, one of those turning-points in history like the Renaissance or the emergence of Christianity in the Roman era. Atomistic and free individualism is fighting for its life against the idea of the organised community. While the outcome is still obscure, there will certainly not be a return to the ideas of the nineteenth century. There is nothing to be surprised at in this. After all, Liberal individualism has surely been only a stage in evolution.

For nearly two centuries these beliefs appeared to be justified by events. The expansion of population, production and wealth, which took place in the hundred-and-fifty years succeeding the invention of the steam-engine and the publication of *The Wealth of Nations*, was without parallel in the history of the world. The Utopia of individualism was on the way to becoming a reality. All classes shared in the general prosperity; the continuous appearance of fresh markets and occupations prevented competition, either among producers in the same industry or between the different industries, from ever becoming too acute or occasioning more than temporary hardship; and the prospect of a future of unlimited prosperity, which the vision of infinitely expanding markets fostered, lent support to the view that the nineteenth-century economic system was based on a rational plan, which assured a natural harmony of interests between all travelling along its broad highway. Traffic control, however, does not become necessary until the number of cars begins to exceed the comfortable capacity of the roads. Until this moment arrives, it is easy to believe in a natural harmony of interests between road users. Unfortunately, by the time "traffic" congestion had begun to make itself felt in our economic system, individualism and the free movement to which it had given rise were so firmly established in the saddle as the recognised way of life that they could not be brought under control.

A special difficulty in the way of forming a dispassionate view has

been the Liberal individualist's attitude towards basic moral issues. Belief in the doctrine that an individual in pursuing his own interests was pursuing that of the community was really only a necessary corollary to that far more dangerous Liberal view that moral law could be established by right reasoning. This made it easy to attribute any apparent clash of individual interests to incorrect calculation. If individuals or nations behaved badly, it must be because they were uneducated, unreasoning or muddle-headed. There could be no conflict between good economics and good morals. This self-deception has recently received a number of uncomfortable jolts.

Under the impact of war, those discussions which end by showing that freedom itself is better than regimentation, self-determination better than dictatorship, and spontaneous self-expression better than censorship, are seen to have gained too cheap a victory. No man will deny these propositions as long as they arise in a purely abstract form. But, as Karl Mannheim rightly insists, "we are not concerned to-day whether any abstract form of freedom is better than any abstract form of regimentation. The problem is rather to discover what structural changes in the different countries led to the downfall of the type of freedom, culture and democracy which prevailed in the nineteenth century. The disastrous situation in which we find ourselves cannot be diagnosed, let alone remedied, merely by repeating the classic Liberal arguments, with their relatively undeveloped sociology, and applying analyses which were only valid at a former stage of social development, and for a completely different structure." Like the pedant in Hierocles, who, when he offered his home for sale, carried a brick in his pocket as a specimen, Liberal thinkers have persisted in trying to interpret the group in terms of the individual.

Throughout this book the views and ideals of man, the individual, have been deliberately almost wholly disregarded, not that at their own "level" they are not all-important, but in order to centre attention on the "blind impersonal group forces." The rules that emerge from this group line of approach can be summarised quite shortly. Man has always lived in groups. There is no such thing as a single type of grouping applicable to all times and to all places. The common factor is that works of organisation have certain similarities at all levels of their operation.

The universe has been found to consist of a series of "levels" of organisation, "hierarchical in arrangement and successive in time," to employ the succinct phraseology of Professor J. Needham. The simpler have preceded the more complicated, and the different levels—or "envelopes" as they are sometimes called—are found to occur one within the other. For example, electrons, atoms, molecules, colloidal particles, the living cell, animals and plants and lastly social communities, form a succession of such levels or "envelopes"; the higher always containing the lower and having succeeded it in the order of creation; doubtless owing its origin, at the particular moment of its appearance, to the emergence of the environmental conditions appropriate to the flowering of its potentialities. "The fundamental thread that seems to run through the history of our world is a *continuous rise in level of organisation*." This process, which has taken place by discontinuous stages, has been the result of an eternal conflict between attraction and repulsion, co-operation and competition, combination and dissociation, in which the victory of combination—the building up of more complex aggregates—though decisive, has never been complete, remnants of the defeated remaining as an essential element in the new level of organisation. At every level there has been a most convenient size—or series of sizes. Stable growth beyond any level of size has usually required an enlargement of the constituent "units" or "building bricks"; electrons had first to be combined into atoms, atoms into molecules, molecules into the complex aggregates which make up the living cell, living cells into organs and organisms, before the larger and more complex societies of plants and animals could be formed on whose prior existence the creation of economic systems has depended. It is precisely the *organisation* of the various "levels" that constitutes their special quality and gives rise to their special forms of behaviour. This, as we have seen, is also true of the different "levels" of economic organisation examined in the present book. Here again, *stable* progress in size has depended on more complex constituent units being invented first.

The query which this past experience raises for the future is: May not one of the reasons for the failure to establish stable *industrial* systems hitherto be that the basic building unit employed—the individual—has been too small and too mobile? Perhaps a larger

and more stable type of constituent unit, something more nearly approaching a national group in size, must first be invented before the dream of world federation can be realised.

Economic evolution must according to the above view be pictured as a series of revolutions: times of discontinuous *qualitative* changes in structure alternating with longer periods of continuous *quantitative* modifications of these novelties in structure, by a process involving progressive specialisation and adaptation. Such specialisation and adaptation entails a progressive loss of freedom by the separate individual unit elements of the system to fit them for the form of group economic life chosen for the community. If external circumstances change suddenly or growth in some important organ within the group is allowed to proceed to the point of upsetting the group mode of life adopted, then the system, being unable to evolve further in the direction selected, has no alternative to dissolution and extinction. Each stage in this advance has not only involved a change in the form of the system as a whole but also a prior regrouping into larger and more compact "bricks" of the constituent units out of which the new whole has to be built.

The simpler and more primitive systems, not being seriously committed to any particular form of overriding organisation—being constituted of small and unspecialised units—have been less liable to suffer complete extinction as a result of overgrowth or environmental change than the more complex, as they have possessed greater plasticity. They have been fitted to deal with a greater variety of habits, climates and circumstances. For example, an undeveloped agricultural area with an immature population—as Russia has recently borne witness—can be readily adapted to a new form of agricultural structure, or even to an industrial form should circumstances demand it, whereas a highly developed urban community has few, if any, degrees of freedom left in this respect: it has gone too far along the road of subdivision and specialisation. The secret of everlasting life is never to grow old, and the warning to the spiritually hard-hearted, "except ye become as little children ye shall not enter into the Kingdom of Heaven," applies to ossified economic systems also.

New economic systems are the result of conflict. Every system has its "reformers" and its "conservatives"—its innovators and its

preservers of the existing equilibrium—to provide the necessary conflict out of which the advances of civilisation are born. In their beginnings an active minority sets in motion a change—a new attitude towards life in general and economic development in particular. There emerges a new attitude towards man and his relationship to his environment. The change may be large or small. An obvious example of a major change was the Renaissance and the Reformation which followed it. An example of a smaller change within that larger change was the nineteenth-century industrial system which it eventually brought to birth. The Renaissance was a major change because it was the occasion of a revolutionary alteration in man's attitude towards life in general. That attitude has been described as the substitution of an individualistic and atomic way of life for an organic one. Mediaeval life was characterised by the subordination of all other interests to religion and society. Life in the economic sense was regarded, not as an end in itself, but as a contribution to a fuller life.

To treat statements of this kind as mere platitudes is, as T. E. Hulme has pointed out, to miss the real nature and significance of *qualitative* changes in man's attitude to his environment. "They should be treated as a kind of discovery, like that of gravitation." They involve a sudden spiritual change, a conversion. Once the revolutionary effect, which the emergence of a new attitude as the driving force behind development can have on human history, is appreciated, it becomes possible to view whole periods as unities. Such conversions have occurred whenever the general interpretation of life has changed. It is not so much that the individual man changes as that the ideas by which his group is dominated change. Men differ very little in every period. It is the framework of their group ideas that alters. Group ideas provide the "huts" for men's minds to live in.

Men of different sorts have probably existed in fairly constant proportions in different generations. "But different circumstances, different prevailing ideologies, bring different types to the top. Exactly the same types existed in the Middle Ages as now. This constancy of man thus provides perhaps the greatest hope of the possibility of a radical transformation of society," wrote T. E. Hulme.

The important factor is, not that different group ideas were held

by a majority of men in different periods, but that these beliefs were the centre of their whole civilisation and that even the character of their economic life was regulated by them. Whenever a new type of economic conduct is forced on man by historical events, a corresponding type of thought necessarily emerges to accompany it. It is therefore no accident that the breakdown of economic life in our time should lead to a breakdown of the individualistic idea. This does not mean that there will be a reversion to the old mediaevalism, only that it is possible that the mediaeval idea might reappear in a transfigured form at a higher level of organisation. Life might then cease to be business and become living. Man the *individual* might again become subordinated to man the member of a *group*: no longer isolated from his fellows by pride, but united to them by new bonds of social comradeship. The new social emotion might be the counterpart (or a revival) at a higher level of the social cement provided by the Catholic Church in pre-Reformation times. Under this system, the "good" would be what contributed most to social solidarity; the "original sin" would be the remnant of the qualities belonging to a lower level of organisation, disruptive now.

Liberal individualism in its present form is barely three centuries old. Its evolution can be clearly followed, and its logical connection with the parallel movement in the economic sphere traced from the sixteenth century. Part of the time that is being spent in tracing back the pedigree of Nazism to Martin Luther, and even further, might be spent with profit on reviewing the history of Liberalism since the days of Calvin to discover where it went astray.

Bossuet called Calvin the first theologian on whose help extortioners might depend. This is even more true of the Puritan view, a classic example of which is Richard Baxter's well-known defence of enclosure of land, "if done in moderation, by a pious man—who will thus have others at such financial disadvantage that his piety will have a better chance to influence them for good."

Again, compare with the teaching of Liberal economists the following homily by the Puritan, Richard Steele: "If God shows you a way in which you may lawfully get more than in any other way (without wrong to your soul or any other), if you refuse this, and choose the less gainful way you cross one of the ends of Calling, and you refuse to be God's steward."

But as Professor H. L. Stewart rightly insists,¹ complaints of the absurdities and gross inhumanities of Puritanism and its successor, modern economic doctrine, should not be allowed to hide the truth that in this way of thinking despite its excesses and perversions lay the very principle required by the age in which these Liberals emerged to take charge of England's economic destiny. "The creation of a type of character fit for economic achievement, a character resourceful, independent, hating idleness, thrilled by the challenge to subdue and develop and exploit the treasury of the earth, honouring the capacities of which it is conscious by eager readiness to use them to the full—that is widely conceded to have been among the direct consequences of the Protestant way of thinking."

But on the other side of the balance sheet must be set the fact that these ungracious reformers lowered very far the level of the social conscience and, if they did not expressly instigate, certainly sanctioned such competitive cruelties as the mediaeval order had persistently suppressed. Last of all, their way of life was to lead by the inevitable logic of its own efficiency to that mechanical regimentation of existence which is such a repulsive feature of the modern industrial State. "The glory of man is gone: only the brutality and evil remain."

In its final form—State Socialism—Liberalism is still living on the remains of humanistic thought of the last century, the basis of which was the first line of Rousseau's *Social Contract*, "Man is born free, and he finds himself everywhere in chains." In other words, man, free from all forms of group attachments, was something wonderful, of unlimited powers: he had not appeared so hitherto because of external obstacles and fetters which it was the main business of Liberalism to remove. This was doubtless an attitude of mind proper to men embarking on the construction of a new *atomic* economic structure with apparently unlimited possibilities of growth.

Now that this Utopian hope has proved a mirage, individualistic political thinkers have become open to the taunt which T. H. Huxley levelled against the Liberal theologians of his day, "free from all contact with fact, theirs is the faith that no man can take from them." Men are beginning to ask whether further progress in human civilisation may not require, as it has done elsewhere in nature, a fresh adventure in social building, based on some larger and more com-

¹ *Hibbert Journal*, January 1942.

plex form of constituent unit—a “community” unit. Past experience has surely made clear that it is impracticable to construct a stable organism of world magnitude out of a unit as small as the individual human being. But the creation of such a new type of group-unit would require something in the nature of a spiritual conversion.

As Aristotle put it, “Reasoning by itself moves nothing.” Emotion and belief are the main active principles of life. Allowed to lie fallow they lose their power to create new life. So attenuated, sluggish and anaemic had become our own bloodstream by the outbreak of the present World War that it was difficult to believe that it was the same blood as that which in days not so long ago welcomed the bracing currents of danger. We said how much kinder we are, not how much colder. But perhaps all that had happened was that the challenge had become weaker and so the response had grown less. It is noteworthy that not only had we grown less ready to live creatively but our emotional pressure had deteriorated in other directions also.¹ It was this low-temperature emotional environment that gave Liberal idealism its opportunity to start in the Western democracies the current pacifism which, as Walter Lippmann has pointed out, was a leading cause of the present World War. In the name of peace the democratic nations were made weak and unwilling to defend their vital interests; this permitted and even encouraged jealous and predatory states to prepare for war. In the end, Britain

¹ That this decline in strength has not been confined to the emotional impulses, but has affected the physical and mental qualities of our population as well, is evident from recent investigations of the subject. We read, for example, that the misfits of civilisation, which at present form about 10 per cent of Britain’s population, “will form about 30 per cent of the next generation, and if present fertility rates of this submerged tenth are continued, in two generations we shall be flooded with unskilled labour that industry cannot absorb, unfit people to crowd out our hospitals, misfits for our asylums and prisons, and worst of all the great army of the “just not well” struggling on in circumstances just a little too hard for them.” (C. H. Burns, *Infant and Maternal Mortality in relation to size of family and rapidity of breeding*, p. 245). Bad conditions of social environment are not primarily responsible for the existence of these people who form a problem in all mature industrial countries. “They are the result of bad biological breeding.” Besides, ageing is proceeding apace. Nearly 60 per cent of the present population of Britain, it is estimated, has already reached, or passed, the age of twenty-nine and the proportion in the older age groups is growing fast. This may be contrasted with conditions in a “young” country like the U.S.S.R. where at the outbreak of the present war nearly half the population is believed to have been under twenty-one years of age and nearly two-thirds under twenty-nine.

found herself left, with her back to the wall and insufficiently armed, to fight a strategically superior enemy, incurring in the process so prodigious a drain on her accumulated strength and resources as to undermine her future standing as a world power. If Europe and the Americas were the only heavily-populated countries in the world this might not matter so much for the future. Unfortunately the position is quite otherwise.

Throughout this book population and production problems have been viewed almost wholly from the point of view of the better-off nations, the "Haves." Nothing has been said about the position of the "Have-nots," that is, of those who are at present being buoyed up by the promise that "a future without want or planning for plenty . . . can no longer be regarded as a Utopian dream but is well within the scope of present-day production." (*Times*, 28th May, 1943.) Not only is there not the slightest prospect of this in the reasonably near future, in such over-populated countries as India, China and others in Southern and Eastern Asia, but on the contrary the picture they present from the point of view of continuing world stability is a highly disturbing one. The contrast between these countries and those of the West was recently tersely summed up by Professor J. B. Condliffe in the following words: "The swarming impulse is now dying down in Europe, leaving the outposts of its civilisation lightly held and in glaring contrast with the overflowing population of other areas."¹

A recapitulation of the process of history reveals an alternation of outbursts of creative energy and leisurely additions made by knowledge: periods of violence followed by indefatigable efforts of men and women to turn mere power into law and order. Passion has been the mother of all great things, real passion. For without passion life cannot acquire a new meaning: institutions from which life has long since departed cannot be swept away and there can be no change in the attitude towards life and living, no radical alteration of pers-

¹ Anyone who cares to take the trouble can confirm this for himself by reading such books as *Report on Limits of Land Settlement*, by President Isaiah Bowman; *World Population*, by Carr-Saunders; and in particular Part VI of the *Natural History of Population*, by Raymond Pearl, and, in short summary form, J. B. Condliffe's *The Economic Pattern of World Population*, issued by the National Planning Association of the U.S.A.

pectives—no new renaissance. Outbursts of new growth after a crisis are always accompanied by fanaticisms. "The crisis itself is an expedient of nature, like a fever, and the fanaticisms are signs that there still exist for men things they prize more than life and property", wrote Jakob Burckhardt. In times of complete calm on the other hand, "private life with its interests and comforts weaves its web round the naturally creative mind and robs it of its greatness." While the free cultivation of the powers of the individual may lead to great and glorious achievement, it is unlikely, to judge from the history of the free city states of the classical world onwards, to bring either security or order to the community in which it is allowed to proceed unchecked, and without limit. So we seem faced with a choice. Either we must make up our minds to control the individual creative impulse or be prepared for a resumption of the eternal cycle of regeneration and degeneration. In making our choice, let us remember that the freedom of the individual that really matters is not the free right of every man to *do* as he pleases, but the unimpeded right to know and to communicate knowledge, and reasonable free play for the human personality. The problem raised by the community is that it serves a purpose beyond that of its individual members. It is true that this purpose can attain its highest fulfilment only if each member actively participates as a contributor, by a process involving devolution associated with a fragmentation of power. It is also true that the effective government of such a community involves a limitation of the free behaviour of individuals which is only partly offset by the community's own subservience to the complex of their common life in society.

Those who feel that the control of individual freedom under any circumstances implies retrogression need to be reminded that many viewed in the same light the emergence in the evolutionary consciousness of man of the spiritual force called Christianity. Even in quite recent times a Liberal historian, Professor J. B. Bury, describing the disappearance of the special kind of individual freedom enjoyed by the ancient Roman world, felt impelled to conclude with these words: "and then an unknown force in the shape of Christianity came in and laid chains on the human mind and suppressed freedom and imposed on man a weary struggle to recover the freedom which he had lost."

On the other hand, the Danish mystic and philosopher, Søren Kierkegaard, who nearly a century ago foreshadowed the coming temporary withdrawal of Christianity from the world, asserted almost the exact opposite. "The whole development of the world leads to the importance of the individual; that, and nothing else, is the principle of Christianity." How are these conflicting views to be reconciled? I do not know; but in that reconciliation, not in the solution of the purely material aspects of the human problem will be found, so I believe, the key to the gate that bars the road to the next stage on man's journey to his goal.

In times of great change men are moved by a power not themselves. The soul of man is fertilised anew by the spirit, that it may experience a fresh quickening of life. There is a reintegration of thought and life, a redirection of the human will, a rebirth. The forces of a qualitative revolution of this kind seem already to have begun to assert themselves in certain countries. While those still living in the age of quantitative expansion which is drawing to its close cannot expect to understand what is happening, they may remember the saying of William Penn, "Men must be governed by God or they will be ruled by tyrants."

.

APPENDIX

WAVES OF GROWTH AND THE TRADE CYCLE

I disbelieve in the objective existence of the so-called "Trade Cycle" of the economic text-book. In my view that "Trade Cycle" is a descriptive fiction forced on economists by the limitations of traditional economic theory. My objection to it is not only that it attempts to bring cycles of varying origin, periodicity and duration under the umbrella of a single simple cycle, but also that it evades the issue by pretending to "explain" when all it is really doing is to "describe" what happens in different terms. The trick is done by over-simplifying and then concentrating attention on what are outwardly striking but actually superficial symptoms of deep-seated changes. Like the witch-doctor who maintained that measles, chicken pox, scarlet fever, smallpox and the plague were all different manifestations of one and the same "Spot" disease, and that the cure for them all was to get rid of the spots by keeping the patient's temperature stable, so the economist boldly asserts that all major interruptions in the even growth of the trade organism are caused by a common malady which he calls the "Trade Cycle," the cure for which is to keep the level of prices or the balance between savings and investment constant, according to whichever of these symptoms happens to catch his fancy at the moment.

I, of course, agree, as I have been at pains to make clear, that economic growth like all other forms of growth is accompanied by wave-like fluctuations: a movement once started in one direction tends to grow cumulatively stronger and stronger up to a certain point beyond which the generative forces weaken until a reverse movement develops. This, however, has nothing in common with belief in the existence of a regularly recurring periodic event called *the Trade Cycle*.

The introduction of any entirely new basic semi-durable or durable appliance or invention must necessarily set in train wave-like oscillations. The flow of demand for an established commodity is usually a regular process because it is controlled by such relatively stable factors as long-run changes in population and incomes, and

the gradual, orderly wearing out and obsolescence of the large body of existing supplies on the market; that is to say, the age-curve of distribution of the commodity in question will be normal. The age-distribution of the supplies of a new commodity on the other hand is bound to be abnormal. There will be no mass of stocks in the hands of consumers when the opportunity suddenly presents itself of acquiring the new article. Even if no actual scramble for it develops, a progressive acceleration of demand is bound to develop sooner or later, to be followed subsequently by a scarcely less intense deceleration, once reasonable stocks have piled up in consumers' hands. Corresponding fluctuations will be set in train in profits and savings as they accrue from the exploitation of the new investment also. The surplus capacity, skill and stocks, i.e. the real savings, of any one of these waves cannot be diverted as they stand—if at all—to serve the purpose of its immediate successor. *Time* is required for reorganisation—a "Trade Cycle" slump. The equipment of locomotive works cannot automatically be used to provide labour-saving machinery for new farms, factories or mines which succeed the building of the railways. Until the production problems of the present war led to the matter being ventilated, the time taken to effect a major change-over in an important section of national production was almost universally assumed to be very short. It had been overlooked that the American motor-car industry, for example, had taken some twenty years to work up to peak production. The motor-car producer began essentially as a designer who placed orders for parts which he then assembled. It was not until competition and experience had discovered the most practical models that production on a large scale was even thought of. Even this also took time to organise and plan. When Henry Ford first organised the Detroit Automobile Company, he only succeeded in raising the paltry sum of ten thousand dollars in cash to finance the venture. From the relatively small savings of men of small means grew, by the reinvestment of profits, the vast Ford properties.

Whatever the view taken in regard to the nature of the various cycles and waves of growth which are known to have occurred, it is surely wiser on historical grounds alone to avoid the traditional economic practice of concentrating on cycles of short range by examining first those of longer range. Otherwise, there is the danger

that investigators will be encouraged to seek to explain the greater in the terms only appropriate to the less. Another advantage of the reverse process is that the longer the period covered by a wave, the less will the vision of the observer be liable to be thrown out of focus by important, though in the long run only transitory, breaks such as those due to national wars, local famines, political upheavals and other traditional interrupters of long-term trends. The third great advantage of first viewing the picture in the broad is that it provides a clearer background against which to survey the various suggestions that have been made for eliminating business fluctuations. When asked: How can we prevent a slump in trade developing in, say, the year 1938? it is easy to reply that this can be done provided that in the years 1935-38 the State has been preparing public projects to be put into operation as soon as private investment shows signs of flagging. The problem takes on a somewhat less facile aspect when the question asked is: How can a country change over from a road and canal transport structure to a railroad transport structure without the intervention of a slump? Or, more pertinently to the conditions of our own time: What grounds are there for supposing that it would have been possible to pass from the railway age of the 'seventies and 'eighties to the electricity and motor age of the nineteen-hundreds and nineteen-twenties without the intervention of the slump of the 'nineties? An even more difficult question to which I suggest no completely satisfactory answer has yet been given is: How can the benefits, in the form of cheaper prices of consumers' goods, of a railway or motor age be passed on to the ordinary consumer except by a fall in the general level of prices in the years succeeding the coming into effective operation of these discontinuous "step-ups" in the speed of transport and communications? Surely this fall in prices is nothing more than an outward sign of the efficient working of the mechanism whereby producers and merchants are compelled to bring selling prices progressively down to the level appropriate to costs in a railway age and, in general, the business community made to concentrate on providing consumers with better service and cheaper goods. A question closely allied to this last is: How, in a system which relies for the progressive raising of the standard of living of its members on decreasing in turn the proportion of the total population devoted to the manufacture of the

different sections of the national output, can the transfer of labour from an older section of the system to a newer one, that this process will require, be effected without the intervention of pauses for re-organisation, that is, intervals of unemployment? It must be remembered that the new section of industry to which much of the labour will be expected to transfer will often not begin to grow until the moment for transfer has arrived. There were no railway occupations until railway building began. Some confusion has arisen on this question owing to failure to appreciate the importance of the order or sequence in which economic events occur. It is often said that a technological invention, by leading to a fall in prices of consumers' goods, will lead to an increase in employment. Actually this is true only of the earlier phases. After the new innovation has begun to pour out increased production at progressively reduced prices the point will be reached when further decreases in prices will not be accompanied by a sufficient increase in sales to maintain the existing level of employment. The end point is reached when the rate of output from the new innovation begins permanently to exceed the rate of sales, and all further practicable reductions in price, under that system of production—or any practicable improvement of it—are unable to maintain the rate-of-growth in aggregate sales. As this stage approaches, workers in the industry, together with those new additions to the population who have grown up in the expectation of obtaining employment in that industry, will find themselves being forced in increasing numbers to turn elsewhere. Unless there happen to be emerging *at this particular time* new occupations with the appropriate rate of increase in employment-absorbing capacity, there must be unemployment.

The main objection to the traditional economic approach to these problems is that it compels those who use it to ignore almost completely the "group" or "organisation" changes responsible for starting what, in an earlier chapter, was termed *multiplicative* or self-perpetuating growth. (See Chapter IV, pp. 66–67.) The public is thus encouraged to regard as infallible signs of economic ill-health what, like puberty and the menopause in the case of the human body, may be necessary and unavoidable discontinuities incidental to the process of economic growth from birth to maturity.

The present Appendix is confined to a consideration of major

"Trade Cycles" or "waves of growth" only. There are, of course, in addition, many other and quite different types of waves or cycles, which may require a completely different form or "level" of explanation. Just as the growth of man's stature is quicker from April to October than during the rest of the year, so is economic growth subject to seasonal fluctuations; and just as it is true, to quote Quetelet, that "le lit est favorable à la croissance, et le matin un homme est un peu plus grand que le soir", so is economic growth diminished by stress and fatigue, the loss being made up during a period of marking time. The number of these different types of cycle, however, is probably much smaller than might be supposed, provided it is permissible to include under the head of major "waves of growth" the mutual reactions of similar waves of growth in allied systems. Besides, many of the shorter waves are doubtless susceptible of a similar kind of explanation to that which is being offered in the present Appendix for longer waves. These waves of growth are the result of an economic system undergoing an *enlargement* in its capacity and a *continuous rise in its level of organisation*.

The growth-changes to which I propose to confine myself are those which have taken place when, as a result of some basic rearrangement of important elements in the structure of an economic system—in particular of a kind leading to a "large-scale" cut in the price at which the volume of output can be produced and sold—the "population" or aggregate of output has been able to enjoy a fresh spurt of growth. The picture to keep before one's mind is that of the destruction of a dam holding in check the pent-up waters of the stream of production. This does not, of course, involve a denial that the particular economic dams that are being removed will probably have been in existence for so long, and the waters of production become so well adjusted to them, that the removal of the dam may not immediately be effective in stimulating the flow of the stream. The local producers of food in a country not yet served by railways, for example, will usually have so restricted their output and adjusted their habits to the requirements of their small local market that time will be needed for the reorganisation of their methods of production to meet the needs of a wider market, even after the railways have been built. The important thing to bear in mind is that the essential feature

of the change is the release of a new stream of growth, not necessarily confined to the economic sector where it starts, and cumulative in its effects over a period of years.¹

How do waves of growth of this kind get under way? And what are the factors that determine the speed and the extent of their spread? The answers are much the same as those that have been given in connection with the still vaster waves of economic change considered earlier in this book; the main differences being that their time-scales are much smaller—a matter of decades in place of centuries. The first phase opens when certain individuals begin to interfere with the established routine. This provokes resistance. The environment is prepared to provide facilities for the repetition of existing habits; it is not adapted to new ways of behaviour; lenders readily lend for traditional purposes; labour of the right type is readily available for the normal jobs and in the right place; customers are at hand to buy the goods with which they are familiar. But people are fearful of adventuring into unknown territory. Even familiar ground may change, but, within a familiar framework, the average business man knows what to expect and how to meet it. If a new framework has to be constructed, the task changes its character. It follows that once a new basic discovery, commodity, process or service has been successfully launched, it becomes much more easy for other people to start the same thing and even improve upon it.² It is this time-lag between the first birth of the new idea and the full adult group movement that gives the wave-like form to growth of this type. The individual members must be marshalled before the group as a whole can get on the move.

It becomes easier not only to do the same thing but similar things. For instance, the application of an invention like the steam-engine or

¹ See charts for U.K. and U.S.A. production in my paper in the *Journal of the Royal Statistical Society*, Vol. CI, Part III, pp. 537-8, 1938. It will be observed that on each occasion of a "Trade Cycle" depression there was a step-down in the rate-of-growth. Growth paused, as it were, for a time and was then resumed at some new point within the system, after the lapse of a sufficient interval to permit the structural reorganisation necessary to release a fresh advance of multiplicative growth in output. This new wave of growth proceeded at a slower rate than its predecessor, as measured by its effect on *aggregate* growth, but represented an acceleration of growth in the particular sector of the economic structure in which it occurred.

² cf. Schumpeter, *Business Cycles*.

railway will affect more than one section of the economic framework, and, by so doing, produce a variety of secondary effects and waves of sub-growth. In addition, once such basic inventions have been installed, still newer developments and forms of growth, previously impossible and unnecessary, make their appearance. This explains why innovations tend to occur in clusters. A railway through a country not served by railways up till then will upset all conditions of location, all cost calculations and all production and distribution arrangements within its radius. Hardly any old "ways of doing things" will remain the same and, just as in their turn these old "ways of doing things" were not isolated items but related links in a single pattern, so also will the new ways of doing things become an integral part of the entirely new or modified pattern that will emerge.

Economic inventions under a competitive individualistic system will usually be centred largely on providing a commodity or group of commodities already in partial general use at a lower total cost per unit than before, in order to extend its sale to a wider circle of customers. The new method will employ a smaller amount of some or all of the factors per unit of product. The "new" entrepreneurs will buy the goods they need for producing it at the prevailing prices, which are adjusted to the conditions under which the "old" firms work, and they will sell their finished product at a price just sufficiently below the price adjusted to the costs of these "old firms" as will enable them to capture the market. It follows that, until competitors in the new method of production emerge, the new entrepreneurs will make windfall profits. The bulk of private fortunes and, consequently, savings and investment in capitalist society in its bouts of accelerated growth have directly and indirectly been the result of processes in which innovations of this kind have been the outstanding feature. This explains why savings and investment have occurred largely in waves, and also why, after rising at the outset of the wave, prices and the long-term rate of interest have tended to fall thereafter. As more and more firms take up production, prices (and of course profits also) will fall until the price at which the product sells will approximate closely to the price which it costs to produce it. When this point is reached, the impulse to spread the innovation and the profitability of spreading it will, for the time being, have spent

themselves. It will need a fresh innovation, i.e. a new discontinuous structural change, to start a fresh wave.

There are thus generally two successive and distinct phases in the process of growth in size. The first will consist of an alteration in the "structure" to permit a new wave of growth in output to start; the second will consist of the new wave of output itself. The first phase corresponds to altering or enlarging the environment to accommodate a fresh wave of population growth. In the second phase, structural changes—of the former kind—will be absent or of an entirely secondary nature; the main feature in this phase will be a new wave of output of goods for general consumption, a wave made possible by the structural innovations made in the preceding phase. There will be new construction in this phase also, but it will be primarily construction of an entirely different kind, factories, houses and plants to extend production, instead of, let us say, railway construction or motor roads.

The two phases will not always be sharply separated in time; it will depend on the nature of the structural innovation. It is always possible that second-phase growth effects may make their appearance before the first phase has been completed. While, in the case of railways, tracks must be laid before new industries and production centres can be developed along their new course, the building of motor roads can in some degree proceed *pari passu* with the relocation of population and enlargement of industrial centres for which these new roads will be responsible. An enlargement of the money supply will be useful in the first phase, during which the plant and equipment needed to produce the reorganisation in production methods or transport must be mobilised—that is, materials, capital and men taken away from existing uses to be employed for a fresh purpose. But, if the addition takes place, or continues into the second phase, it will be harmful, for by this time the wave of new production for general consumption should be getting under way and success here will depend, not on *enticing* men, materials and capital to leave one set of competing occupations and go into another, but on *forcing them out* of existing uses of all kinds, e.g. reducing man-power per unit of output generally, in order that goods may be placed on the market progressively more cheaply, which can only be done by increasing output per head. That is to say, it is necessary to the

orderly progress and development of growth in output in general that the average price level should have a falling trend in periods following the introduction of major innovations, in the same way as large estates must be broken up into small if more people are to enjoy the benefits of land ownership in an occupied region. An inflation of the money supply during this phase will not only check the process of cheapening the cost of consumer goods made possible by the innovation, but may even lead to a resumption of the first phase, e.g. the building of, say, additional railways at a time when railway building has already been carried too far for immediate needs. It will also tend to start a vicious spiral between wages and prices. Experience suggests that it is essential to the orderly absorption by an economic system of the modern type of additional goods whose production at cheaper prices is made possible by innovation, that the level of prices, profits and the rate of interest should decline over the years; this is the only way in which optimum consumption can be achieved.¹ The only way to pack a larger "population" of goods into a given "environment" of income is by making each occupy less "space."

If the innovation is a major one, its introduction will so seriously upset the existing equilibrium of the system, while it is being

¹ A long-run (secular) tendency for prices to fall embodies the method by which the capitalist mechanism diffuses the fruits of industrial improvement over the masses. This is analogous to the process of fitting more people into a piece of territory by packing them more tightly. This may seem illogical to the economic theorist but not to those who accept the line of reasoning developed in the present book. "Experience tends to show that neither capitalism itself nor the social institutions associated with it, democracy among them, can work efficiently and with comparative smoothness, except on a falling trend in prices. . . . All the alternatives that are politically feasible carry with them other effects which in one way or another tend to upset the working of the system. It should, of course, be clearly understood that the argument just set out is not intended to cover such cases as the short-run fall of prices in a depression." (Schumpeter, *loc. cit.*, p. 467). An examination of the chart for production, prices and the rate of interest on p. 305 will show that while production continued to grow throughout the period charted, the *long-term* trend of both prices and the rate of interest was downward throughout. The downward trend, however, was temporarily interrupted—and reversed—on three occasions, namely, during the period of railway building from 1845 to 1875, at the onset of the motor and electrical age at the close of the 1890's and during the wartime inflation of 1914–20.

As the above theory might lead one to expect, the culminations of the railway age in the 1890's and of the motor age in the 1930's were signalised respectively by a sharp break in the rate of interest curve (see Table on p. 305).

exploited, that a period of rest will have to be provided to allow the system as a whole to digest it. There will need to be a pause—a "Trade Cycle" slump—to enable the economic system as a whole to adjust itself to the new situation by eliminating materials and structures incapable of adaptation and, in general, reorganising the life of the community to accommodate itself to the new state of affairs.

According to the above view, the process of economic evolution may be summed up as a number of waves of more or less continuous change, each separated from its successor by a period of discontinuity—a structural dismantling followed by a reconstruction. Thus a qualitative change due to a major innovation will release two successive and entirely distinct waves of disturbance in the economic system as a whole. The first will represent the reorganisation of some basic parts of the structure of the system to enable a new wave of output and population-redistribution to start within it; the second will represent the wave of additional output and the population-redistribution made possible by the alteration in structure.

Economic progress is thus a disturber of equilibrium. The popular idea that economic progress is something naturally smooth and regular and that fluctuations are something different from it and inimical to it is wholly erroneous. A second important quality of economic progress is that it involves organisation—and reorganisation—towards a *particular* end or in a particular direction, the infusion of a different kind of order into the units comprising the pattern to enable a combined move forward to be made by the group as a whole. Growth proceeds by combination and order.

New enterprise thus starts off in a definite direction; it does not distribute itself equally over the industrial field. Accordingly, its possibilities are, in every case and in any given state of economic evolution, definitely limited. What eventually causes a falling away in activity is the reaction of the system to this progressive growth in a limited direction, in the same way as the resistance of the environment checks continuity growth at compound interest in the case of a population.

There is, according to this view, nothing self-generating about a cycle, that is to say, it will not automatically be set going by such things as the easy money conditions, surplus labour, and plentiful supply of raw materials so often found in periods of economic

depression—these, like famine and disease in an over-populated country, are parts of the machinery of readjustment only. Much the same comment is applicable to “explanations” of trade movements which attribute recession to errors of business adjustment and booms to excesses of optimism. The explanation offered here does not contradict the latter, it only shows that—from the group point of view—such errors are unavoidable, and the individuals who make them are not to be held responsible for the disturbances that ensue when untried things are put into practice. As Schumpeter says, “when a system is forced to adapt itself to a new state of equilibrium it is understandable that mistakes of all sorts should become more frequent.”

The above method of analysis treats booms and slumps in an entirely different manner from that generally accepted by economists. Periods of prosperity are no longer simply “good” periods, and recessions “bad” periods. The implication, if anything, is the other way. The periods of so-called “bad times” which succeeded, for example, the Industrial Revolution and the railway and steamship age and the culmination of the motor age did not in point of fact suffer from any absolute decline in production although they were affected by falling prices and interest rates and the tendency for unemployment to persist. On the contrary, both the British and American figures indicate that the trend of per capita output and real income rose in these periods.

The unemployment during the recession which follows a phase of structural “enlargement” is due primarily to the fact that the work of those responsible for providing the equipment for the new innovation is no longer required to the same extent as before. Once the main railway lines of a country have been laid down there will be a slowing down in the rate of demand for railway materials. Since, as already explained, it is inevitable that the rate of production of these materials should have been progressively speeded up in the early phases of railway building, there is bound to be a slump—a deceleration—when the rate of demand for more railways slackens. Even if new construction is required in connection with the consequential wave of population redistribution and new growth in general consumption for which the building of the railway will have prepared the way, it will be construction of an entirely different kind: new

houses, towns, factories and cost-saving production appliances in place of railway material and appliances. And, before this secondary wave can be properly started, time is likely to be needed to enable the plant, materials and personnel of the railway-building phase that are capable of adaptation to these new purposes to be reorganised and their prices adjusted to a suitable and probably lower level. Fluctuations, due to unevenness of growth in the case of the subsequent or second phase, will be much less violent, as growth in general consumption is, usually, a fairly slow and long-drawn-out process compared with structural alteration. Tastes have to be altered, habits changed, as well as the prices and qualities of the goods to be sold progressively adjusted downwards as sales are extended to the different levels of incomes. The conclusion of this phase will be more like that of the passing away of a patient after a long illness than death by a sudden stroke; there will be no sudden "Trade Cycle" collapse. A dying away of this kind was experienced in the late 'nineties and another in the nineteen-thirties.¹

By entirely ignoring the time factor and the problem of structural reorganisation and proceeding on the assumption that new growth at every stage of economic evolution is of the same kind—and continuous—the traditional economist is able to delude himself into believing that every interruption in economic growth is a disaster and every boom not far short of a blessing. He is thus able to dangle before his reader the vision of an eternal Nirvana of stable prices where there will be neither unemployment, insecurity, nor pain of any kind. His argument like his reasoning is simple: in a slump capital and labour lie idle; this is a net loss to the community; accordingly

¹ While attention in this chapter is concentrated on those major waves caused by revolutions in the means of transport and power which have affected the economic system as a whole, it should be realised that within these "national" waves there have been "regional" or sub-waves—that is, waves confined to a particular locality or region consequent upon the opening-up of some special industry or source of supply limited to that area. Mining development has provided many interesting examples of waves of this kind. In this case, of course, there can be no such thing as attaining an eventual balanced condition, for, once the mine is worked out, the area will die. Dr. L. Dudley Stamp, who discussed this problem in an interesting paper read before the Conference on Mineral Resources and the Atlantic Charter, held under the auspices of the British Association in July 1942, showed that a definite cycle can be associated with the working of mining areas. Briefly, it has three phases: exploration, exploitation and exhaustion.

it must be prevented at all costs; any form of enterprise will do for the purpose; if all fails let the State institute schemes of public works! He ignores entirely the possibility that a slump or "waiting period" may be needed for adjustments in the production, price and labour structure—time given to mobilise and reorganise resources for a fresh upward swing of multiplicative growth in some new part of the system.¹ If this process be interfered with there may be no new growth at all in the "progressive" sense.

Like a man rebuilding his house, a community cannot expect to enjoy the benefits of a more commodious economic residence unless it is prepared to suffer the inconvenience of being without any proper

¹ It may assist in making the position clear to set out some of the features in the traditional method of economic analysis to which exception has been taken in this chapter.

1. Economists assume an equilibrium position where an appropriate monetary policy can achieve a steady price level and full employment.

2. They use the same vocabulary to describe periods of continuous change and periods of discontinuous change.

No distinction is made between interruptions occurring during phases of continuous growth (to which the traditional analysis—and possibly remedies also—might be appropriate) and interruptions due to structural changes incidental to the process of growth in size.

3. The historical aspect of cyclical movements is regarded as covered by tracing the independent movements of the various factors over a period of time and pointing to the causal forces which are supposed to connect these movements. The idea of growth as a single process of "historical" change, with a "before" and an "after,"—the true dynamic—is ignored.

4. The analysis is conducted mainly in terms of the individual firm. No distinction is made between individual behaviour and group behaviour; the latter is treated merely as a summation of a collection of the former.

The writer's approach may be summarised as follows:—

Instead of the economists' long and short run, he distinguishes between periods of continuous change and periods of discontinuous change; these alternate with one another. The former may be interrupted by short-run slumps; but these have little in common with the disturbances in growth that occur at moments of abrupt change.

These latter represent discontinuous changes in the *structure* of an important part of the economic system, a breakdown of one or more of the containing walls of the existing structure, followed by an enlargement to make room for a fresh outburst of growth. Conditions before and after a period of abrupt change are so different that they cannot be causally connected by any form of *continuous* analysis. It is like trying to explain the difference in the accommodation and amenities of a row of houses and those of a block of flats by which they have been replaced by comparing the number of bricks used, the area covered, or the money cost of each.

housing accommodation at all for a time. There must be an interval to allow for the old house to be pulled down and the new one to be built up. While a single house is being rebuilt the owner can usually find temporary accommodation in the house of a friend; not so in the case of a community building scheme, for all will be having their houses rebuilt at the same time.

No clear picture of the historical process of economic evolution is possible until one has rid oneself of the prejudice that a period of falling prices is in all circumstances an unmixed evil to be prevented at all costs. It may be quite true that a nation may accumulate a burden of debt so far beyond its capacity to pay that an inflation of its currency and prices provides the most convenient method of "welshing" its creditors. It may, nevertheless, still be true that open default would have done less harm in the long run to those employed in industry and the poorer sections of the consuming public. The fact remains that, whatever theoretical view may be held on the desirability of a stable or rising level of prices, the long-term evolution of our present economic system has, in fact, been associated with a secular tendency for prices to fall. This trend was, it is true, periodically reversed by short-period price inflations associated with "structural" discontinuities—involving "enlargement" of the system and a redistribution of populations and industries. The value of these price inflations from the standpoint of general economic welfare was that, in addition to reducing burdens of past debt, they assisted in breaking down the existing cost structure, without which a redistribution of population and the spreading of industry over a wider area, to permit a further rise in the average standard of living and the accommodation of an increased population, would have been impossible. Thus, the price-level has changed according to the job it had to do.

Unfortunately, so far as Great Britain is concerned, little or no attempt seems to have been made to collect detailed information in regard to economic events in periods of falling prices for the century prior to the first World War. There are two reasons for this. First, during the greater part of the second half of the nineteenth century, the more important redistributions and relocations of population and occupations seem to have occurred in the sections of Britain's international pattern situated overseas—that is, their effect on our

domestic pattern was largely indirect and subsidiary. The second reason why little information has been collected is that the matter does not appear to have interested British economists, as it was not relevant to their particular theory of trade development.

Certain investigations, however, have been made in regard to population redistribution during this period in the U.S.A., where, since her system has been largely a self-contained one, complications due to external disturbances have been less important. In one of the earliest of these studies, William H. Newman has pointed out that, so far as the U.S.A. was concerned, it is not only reasonable in theory but also has been demonstrated statistically, that the total amount of building space and the total population tend to maintain a constant proportion.¹ There was, for example, only a net change from 12.0 to 11.8 buildings per 100 inhabitants in Chicago while population grew from 100 to 3,400,000. From this direct connection between the total supply of building space and population, it follows that new building should vary with population growth and redistribution. This does not mean that a decrease of population in one locality will offset an increase in another locality. Because of the immobility of buildings, a spreading of people within a nation—a migration from farm to city or from one set of industrial areas to another—may call forth a new wave of building activity in just the same way as does a net rise in total population.

It will be evident that the existence of a direct relation between population growth and building activity will not in itself be a reason for fluctuations in building activity. If the rate-of-growth were constant, then the volume of building would tend to follow a regular long-term trend. Actually, as Newman shows—and the theory in this book would lead one to expect—shifts in population have occurred in waves which, allowing for a suitable time-lag, coincide with the major building cycles.

Referring to the theories which ascribe major importance in causing these waves to innovations leading to changes in industrial structure and organisation, Newman writes: "Evidence in the present study gives direct support to these claims. The major fluctuations in building activity were found to be closely associated with shifts in population; and these shifts in population are, of course, reflections

¹ *The Building Industry and Business Cycles*, Chap. V (University of Chicago).

of economic and social alterations which make a change of residence desirable to a large number of people." As the influence of the new innovation responsible for attracting people to the new centres spends itself, or new counterbalancing influences arise, population migration diminishes and even stops altogether. From a comparison of data collected from seventeen American cities, Newman has been able to demonstrate the existence of a very striking similarity between the major movements in the population growth series and the building-permit series for identical cities. Both curves show three major cycles, with approximately the same turning-points and of the same order of magnitude. Population growth, as one would expect, tends to anticipate the major changes in building activity by a year or two.¹ Later investigators have collected evidence for earlier periods, bringing the total number of cycles for the past hundred years to six. These cycles have occurred alternately in periods of low prices and in periods of high prices and been associated with "structural" changes.

Newman's curves, together with the more inclusive B.N.N. building index are shown on the chart opposite.

It will be observed that the first of the three building cycles charted occurred during a period of falling prices, the second during a period of rising prices, and the third again during a period of declining price trends. Newman, referring to the popular economic view, observes: "While it is reasonable to expect an inverse relation between the level of building costs and the quantity of new buildings absorbed by the market, such is not the case. On these major swings, the changes in demand outweigh the influence of building costs."

¹ Evidence that these major cycles in building activity are a basic phenomenon, rather than due to chance, is found in similar fluctuations of real estate activity. Hoyt discusses real estate cycles covering fifteen to twenty years or more in his book on *One Hundred Years of Land Values in Chicago*. (University of Chicago Press, 1923.) Wenzlick records similar cycles for St. Louis ("Problem of Analysing Local Real Estate Cycles": *Journal of the American Statistical Association*, March 1933, pp. 201-6), and Maverick finds comparable fluctuations in real estate activity in Los Angeles and in San Francisco. Moreover, such major swings in economic series are not a newly discovered phenomenon. These major cycles in building are essentially like the secondary secular trends emphasised by Kuznets in his *Secular Movements in Production and Prices*, and Burns' trend cycles rest upon the same underlying changes. There can thus be no doubt that these major cycles in building activity are characteristic and fundamental.

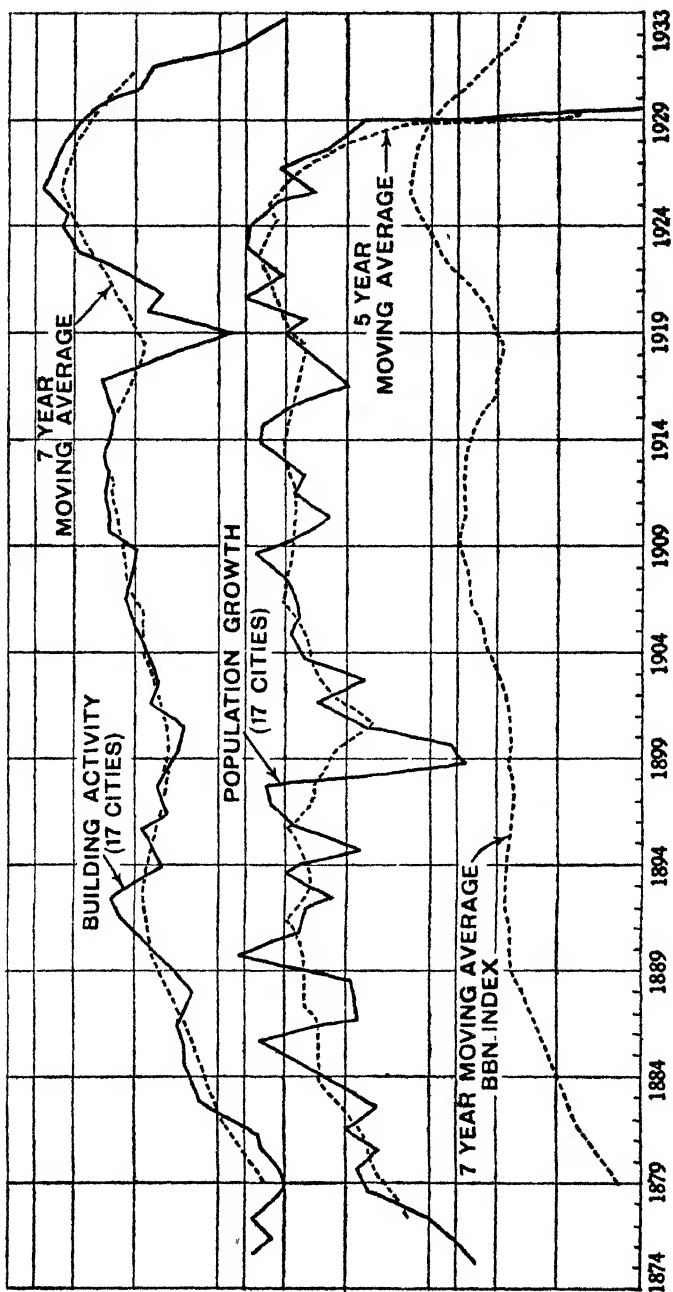


FIG. 6.—U.S.A. Population growth and Building Activity, 1875-1933 : after Newman.

His conclusion is that conditions in the long-term money market do not explain the major fluctuations in buildings.

While, for the reasons already given, few data exist in regard to the corresponding pre-1914 British cycles of this type, the course of the waves of economic growth which accompanied them can be roughly followed from the chart opposite. Only in regard to the period after the 1914-1918 war does any detailed information demonstrating the relation between United Kingdom population movements, expansion in building and trade growth appear to be available. We have dealt with this period in the review of the closing phases of the present British economic system in Chapter XIV.

Meantime it may help in elucidating the difference between my method of approach and that of the orthodox theory to examine in some detail an example taken from actual history. Perhaps the most famous example of the confusion that can arise from failure to distinguish between the environment favourable to growth in the *capacity* of an economic system and that required to foster the succeeding wave of growth in *output* is to be found in the "explanations" still current in reputable economic text-books of the famous "Great Depression" of the period 1873-1896. During this period, prices, interest rates and profit margins fell steadily almost without interruption. The most popular economic explanation of that dramatic fall in prices has been—and still is—a slackening in the production of gold, coupled with the adoption of the gold standard by nations previously on a silver basis. The fact that bank reserves and bank credit showed a relatively consistent rate of growth, quite unaffected by variations in gold production or by the trend of prices, has been quietly ignored.¹

¹ I agree with Schumpeter when he says, "It would be nothing short of absurd to say that Californian and Australian gold discoveries *called forth* railroad construction in the 'fifties and 'sixties, or South African gold discoveries the 'Electrification' of the economic world in the nineteen-hundreds, both of which had begun before, or that these events would have been impossible without them." (Schumpeter, *Business Cycles*, Vol. 1, p. 176).

It should also be remembered that, contrary to the popular economic view, new gold production may from one aspect be looked upon as a result of price movements, not as a cause. While it is true, of course, that gold production has been largely the result of accidental discoveries, nevertheless fluctuations in gold production can, in part, be related to the changes in the price level which alter

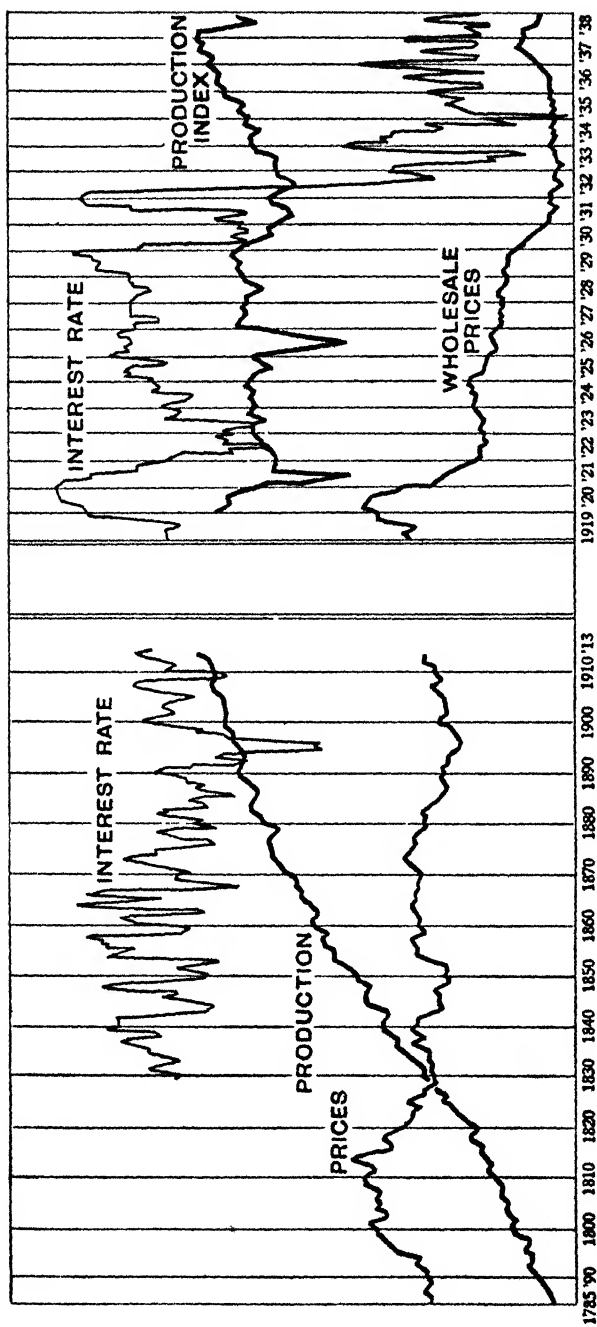


FIG. 7.—U.K. Prices, Production and Rate of Interest, 1785-1938.

Another common explanation, within the same monetary vocabulary, is the assertion that the money interest rate was "too high" to permit of the full employment of resources. Now, provided one accepts the quantity theory of money and the method of economic analysis associated with it, the above explanations are not only plausible but necessary. If prices *can* be kept stable by monetary means, then the problem becomes merely a question of pumping a sufficiency of money into the economic system whenever that level shows signs of falling. The circumstance that such treatment, like pumping blood into a man suffering from low blood-pressure, might kill the patient, is beside the point—that is to say, is outside the terms of the methods of economic analysis used!

To the practical business man, content to take facts as he finds them, the outstanding feature of this period was the revolutionary change in cost and supply conditions due to the steamship and the railway. Prices fell simply because freight rates were lower and new sources of cheap and abundant supply had been opened up. Almost in the twinkling of an eye, the vast resources of the New World were thrown open to the service of the Old.¹

Two phases in the historical development of this period can be distinguished in contemporary records. In the first phase, lasting roughly from 1848 to 1873, that is, while the railways and shipbuilding programmes were under way, our home costs and prices rose sharply. Supplies of material and labour relative to demand tended to be short in many directions, because railway construction and shipbuilding, as new inventions, involved unexpected calls on the cost of mining gold and so the profitability of producing gold. The further prices fall, the more profitable it becomes to produce gold. The process is cumulative. According to Warren and Pearson there is a lag in the cycle of gold production relative to the cycle of prices of about fifteen years. For example, for the period 1873 to 1920—one complete cycle of prices from peak to peak—the corresponding cycle for gold production extended from 1888 to 1935. In the period of high prices before 1873, gold production was discouraged, and this influence continued for some fifteen years; similarly when prices reached bottom in the 'nineties, the production of gold received a fresh stimulus which carried on for a considerable period after prices had begun to rise.

¹ Even that cautious economist, Dr. Marshall, was compelled to admit that, while he saw a depression of prices, a depression of interest and a depression of profits, he could not "see any reason for believing that there was any considerable depression in any other respect." (Official paper of Royal Commission on Trade and Industry, 1886, p. 99).

country's existing constructional resources. The surplus of gold doubtless encouraged a faster rate than the system could stand because it stimulated an excessive price rise. The second phase began as soon as the railways and steamships were ready to act as a pipe-line between the previously inaccessible superfluity of the new countries overseas and the scarcity at home. The price movement was then reversed. This phase began in 1873 and lasted until about 1896. Supplies of food and raw materials began to pour into the Old World, not only at a faster speed than ever before, but also at prices which in course of time were to be only a fraction of those ruling in the first phase. Not surprisingly, consumption was unable to cope fast enough with this flood of new supplies. A quick limit of sale at any price at all is soon reached in most commodities. Thus the rate of opening up of further new lands and railways had to be held in check. Meantime, gradually increasing competition among producers on the land already opened up prevented any let-up in the fall of prices, until growth in consumption had caught up with growth in production. This did not happen until the middle 'nineties.¹

This change in phase was reflected in investment policy. The

¹ When considering the dissemination of a major invention like the railway, the picture we must have in our minds is not that of a *single* railway, but of a "population" of railways. This conception implies that, when the crisis is reached, there will be railway lines in all "stages" of completion; some scarcely begun, some half-finished, some completed but not working and, lastly, some in efficient operation—with a preponderance, in all probability, of the incomplete or "younger" categories. The same will apply, even more strongly, to the mines and estates opened up afterwards as a result of the railways, most of which will take years to reach full bearing. The completion of many of these railway, mining and estate developments will be continued long after the boom is over, to avoid total loss of the capital invested. Just as it is impossible to check population growth at the exact point when the appropriate number of *adults* is reached—because we cannot prevent the children already born from growing up—so it will be impossible to prevent a new invention, like the railway, from continuing to exert a progressively increased pressure on the economic system, long after it is generally agreed that the optimum point of current railway requirements has been reached. So, in the period under review, not only railways but mines and sources of food supply were opened up overseas, much in excess of existing requirements. When these attained the adult producing age, competition between them exerted a progressive downward pressure on prices which was bound to continue for some decades, until population growth and the rise in the standard of living had caused demand to catch up with supply. The first crisis occurred, of course, as soon as it became no longer possible to continue speeding up railway building.

flotation of high-yield railway and foreign loans declined, but not, except temporarily, the industries engaged in the actual production of railway equipment, owing to the extremely fortunate circumstance that railway building continued on an enormous scale in countries outside Britain. This helped to make possible the two minor railway construction booms of 1882-3 and 1888-9. But the main stream of investment was diverted to "intensive" purposes—as contrasted with the "extensive" purpose of railway building—that is to say, to investment of a kind that assisted in increasing the productivity of labour, thereby increasing its standard of living, by means which involved, not a further spreading of population and industries over a wider area, but greater economies in the use of land, labour and materials in existing locations.

The extremely valuable function performed by the pressure of so-called "trade depressions" in progressively reducing the level of prices and thereby increasing the general standard of living has been almost entirely overlooked until recently. While data showing the effect in detail of this process of price reduction on the standard of living are not available for the period under review, they have been collected for the last twenty years. The figures show that the remarkable increase in the productivity of labour—and the standard of living—which occurred after the World War of 1914-18, instead of being distributed more or less evenly over the whole period, was concentrated almost entirely in these two sets of depression years, 1921-23 and 1930-33.¹

Historical facts supporting an explanation of the Great Depression of 1873-96 on the above lines have recently been brought to light by the economic historian W. W. Rostov. He writes: "The direction of British investment sharply changed after 1873. The flotation of high-yield railway and foreign government loans fell off, and was supplanted by various kinds of intensive investment at home as the principal source of employment. In addition to the current effects of this type of investment, the consequences of railway building, plant expansion, and the opening of new sources of supply (1848-73) appeared in the years after 1873. Although the expected yield on new investment fell, it did not fall so far as to discourage sufficient activity to maintain "normal" employment. The movement of prices, profit

¹ See footnote, page 203.

margins, real wages, the terms of trade, conform to this picture. Prices and profit margins fell, money wages remained virtually constant, the terms of trade for Britain improved. Such failure as there was to attain full employment, in the two booms that fall within these years, cannot be traced to an artificially high interest rate, but rather to the inadequacy of high-yield outlets for investment; to inelasticity on the demand, not the supply side of the market for loanable funds."¹

To accept the above explanation does not assume that the gold situation had no effect at all, but only that its influence on prices was secondary to that of the increase in the goods supply. Had more gold been available, it might have prevented temporarily the fall in prices—by causing an even more excessive speculative boom in railway building, in the opening up of new overseas territory, and in the establishment of new farms and urban centres than in fact occurred—but it could not have done so permanently. To have prevented, for more than a short time, the fall in prices and the rate of interest by artificially forcing the investments of savings would have been to hold up long-term growth, for the creation of new openings for *future* savings required that *first* there should be a collapse of the railway boom and a fall in prices. Moreover, the savings that were invested in the second phase came not so much from the railways as from the cuts, made possible by the railways and ancillary inventions, in freights and selling prices of the food and materials they transported. To begin with, those first in the field made high profits, for their costs tended to fall far more rapidly than did their selling prices. So long as the level of profit continued to be high, it paid to use the savings to extend the new innovations. In theory, an alternative would have been to distribute these increased profits in the form of increased wages and salaries. Nevertheless, quite apart from the dislocation that would have occurred in the labour field, owing to one set of workers getting large increases in pay while those in the less fortunate occupations derived no benefit, there was the insuperable objection—usually overlooked by those who have examined economic problems of this period outside their historical setting—that the additional goods on which these increases might have been spent *were not yet in*

¹ *Economic History*, Feb. 1940.

existence! To have distributed the profit as extra wages under such circumstances would merely have caused price inflation in existing categories of goods and this would have held up the secular growth and rise in the average standard of living of the system as a whole. A homely example, extracted from the records of those prosperous nineteenth-century days, may help to elucidate some of these apparent paradoxes. James Nasmyth, who owns a machine-making business, is explaining himself and his methods to a Commission:—

“... One of the results of these mechanical improvements is that where one automaton machine was going on with its work, and would occupy six or eight hours to complete it, now, instead of the man standing still, you could give him another machine to look after. I had an instance in my own works, where I gave a labourer a machine to bore the cylinders for steam-engines. In the first instance he had only one machine, and after the cylinder was put back into the boring machine he had to stand with his hands at his back perhaps reading an old newspaper or a new newspaper as the case may be, and then putting a drop of oil now and then; he had such a surplus of time on his hands that I thought proper to give him another boring machine, and it ended by my giving six, and with every additional machine I gave him a shilling a week extra . . .

“(Mr. Harrison). With regard to the man whom you subsequently employed upon six machines, what were his wages when he had one?

“16s.

“He was worth 16s. to you? . . . Yes.

“Probably more. I mean that the profits derived from the man’s labour were worth say 20s.? . . . Yes.

“When you put him upon six machines, his profits to you were therefore £6 a week? . . . Yes.

“And he received 20s.? . . . Yes. I was very niggardly in giving him only 20s. a week, but it is quite possible to spoil a man like that by giving him too much at once . . . I was the employer and he was the employed, and we were dealing together to our perfect mutual satisfaction.”

Nor was Nasmyth himself the man to spend his large profits on his own amusement. The frugality which he imposed upon others he exercised himself.

“(Lord Elcho). You talked of the wages that you first got when you came to London being 15s. a week, and you say that you saved considerably upon that. May I ask how much you could save out of 15s. a week?

... I saved 3s. a week, and I got a little apparatus made to cook my dinner, which I have at home now.

"You invented a little apparatus for that purpose, did you not? ... There was no invention about it at all; it was so simple. It was heated by an oil lamp below the pan, like what they cook children's food with in the nursery now. It cost me a halfpenny a day for oil.

"You put your dinner into that apparatus, did you not, when you went out at breakfast time, and it was so calculated that when you came home you found your dinner cooked? ... Yes. I indulged in a leg of beef. By walking across from Lambeth to Farringdon Market I could buy it at 2½d. a pound instead of 3½d. and it was stewed to perfection by my apparatus.

"That little pot you show, do you not, as the foundation of your fortune? ... Yes, that it was the spirit of self-denial and love of true independence that did that."¹

Whatever view may be taken of Nasmyth's self-righteous explanation of his own success or of his treatment of his machine-minder, it is difficult to deny that, from the point of view of the long-run well-being of the economic system *as a whole*, the policy pursued was, in the circumstances of the day, the best. It was not as if the profits made were spent in useless luxuries by those who received them; the ideals of thrift and abstinence operated to restrict personal consumption in the case of the factory owners just as strongly as they did in the case of their workmen. Profits were put back into the business; and the new inventions were spread all over the world. In one sense the men and masters alike of those days may be said to have made sacrifices in order that posterity, i.e. future additions to the population, might enjoy sooner and in larger measure the benefits of a steam-power and railway industrial system. In another sense it is true to say that no reasonable alternative was open to either party, as the additional consumers' goods on which they might have spent their newly acquired money were not available. The sudden "discontinuous" jump in income and profits was, like an unexpected bumper harvest, too sudden to be absorbed in consumption. This is one reason why it is entirely misleading to describe the situation simply as one in which the capitalist employer benefited *at the expense* of his

¹ Tenth Report of the Commissioners appointed to Inquire into the Organisation and Rules of Trade Unions and other Associations: together with Minutes of Evidence, 1868. (Quoted by A. T. K. Grant in *Society and Enterprise*.)

workmen. Both were to benefit in the long run, though not necessarily to the same extent.

These major waves of economic change were interrupted by minor discontinuities, because a major innovation rarely emerges in its final form or covers the whole field in a single uninterrupted movement. Pauses for reaction, elimination and absorption are usually necessary at different stages of the process. When these pauses occur, however, the movements which precede and succeed them will display a family likeness and be related to one another as parts of a higher unity in which they will be welded together as a single "historical event". Both the Industrial Revolution and "railroadisation" gave rise to clusters of waves, and each of these clusters formed an integral part of a single major wave with recognisable historic phases.

Finally, each of these major waves in the "enlargement" of our economic system was, in its turn, a phase—but a connected phase—in the still larger process of achieving a condition of equilibrium between the population as a whole and the environment as a whole.

INDEX

- Adams, James Truslow, 261
 Additive growth, 66, 67
 Adriatic, the, 254
 Africa, 60, 122, 139, 141, 142, 146, 155,
 169, 242, 254
Age of Reform, the (Woodward) 161 n.
 Agricultural Revolution, the, 106, 140,
 168
 Agriculture, 101-13
 Aleppo, 96
 America, *see* U.S.A.
 American Chemical Society, 232
 American Colonies, 16, 136, 144, 145,
 149
 Anglo-Saxon Scandinavian group,
 255
 Antwerp, 121
 Arabia, 97, 99
 Arabs, 96
 Archimedes, 34
 Argentine, the, 69, 152, 188, 189, 191,
 193
 Aristotle, 84, 282
 Ashby, Prof. A. W., 219
 Asia, 116, 142, 193, 283
 Asia Minor, 90
 Assyria, 96
 Athens, 85, 86, 98, 177, 253
 Attica, 85, 86
 Australia, 17, 150, 152, 166, 189, 191,
 193, 194, 199, 262, 304 n.
 Austria-Hungary, 255, 273 n.

 Babylon, 92
 Balance of payments, 17, 195
 Balogh, T., 147 n.
 Barlow Commission, 36, 207
 Bates, Sir Percy, 17, 18
 Baxter, Richard, 280
 Bedouins, 96
 Beer, Prof. G. L., 149 n.
 Belgium, 120, 201, 202, 259
 Benham, F. H., 2 n.
 Bentham, J., 162, 163
 Berdyaev, Nicholas, 275
 Bergson, H., 271
 Berlin, 272 n., 274 n.
 Bernal, J. D., 265 n.
 Biological growth, 46-62, 91
 Birmingham, 36, 133
 Birth-control, 12, 14, 59, 159, 171
 Birth-rate, 7, 54, 59, 77, 159, 160,
 171-3, 187, 208
 Black Death, the, 110 n., 118
 Blacker, D. C. P., 174
 Bolivia, 127
 Boom periods, 174, 175, 177, 191, 200,
 201, 229, 297, 298, 307 n., 309
 Bossuet, J. B., 280
 Boston, 145
Bourgs, 102, 115, 117
 Bowman, President I., 283 n.
 Bramah, J., 161
 Brazil, 191
 Bressey, Sir Charles, 36
 British Association for the Advance-
 ment of Science, 21, 92 n., 203 n.,
 298 n.
 British Columbia, 184
 British Empire, 18, 141, 146, 148, 150,
 182-96, 201, 202, 214, 242, 254,
 262, 263
British Empire, The (Mullett), 135 n.
 Brogan, D. W., 262
 Brownless, John, 50
 Building Cycles, 301-2
Building Industry and Business Cycles,
 The, (Newman), 301 n.
 Bulgaria, 254
 Burckhardt, Jakob, 284
 Bureaucracy, 246, 247, 265, 273 n.
 Burn, D. L., 170
 Burns, Dr. A. F., 75, 77, 78, 302 n.
 Burns, C. H., 282 n.
 Burns, C. M., 54 n.
 Bury, Prof. J. B., 284

- Business Cycles* (Schumpeter), 164 *n.*, 292 *n.*, 304 *n.*
 Byzantine Empire, 116
- Calabria, 90
 California, 166, 304 *n.*
 Calvin, J., 280
 Calvinists, 267
Cambridge Ancient History, 88 *n.*
Cambridge History of the British Empire, 144 *n.*
Cambridge Mediaeval History, 101 *n.*, 115 *n.*, 118 *n.*, 121 *n.*
 Canada, 17, 151, 152, 169, 180, 182, 189, 190, 191
 Canadian Cost of Living Committee, 1915, Report of, 190
 Cape of Good Hope, 122
Capital and Employment (Hawtreys), 72 *n.*
Capitalism, Socialism and Democracy (Schumpeter), 58 *n.*
 Carr-Saunders, A. M., 283 *n.*
 Chase, Stuart, 207 *n.*
 Chicago, 301
 Chili, 141
 China, 228, 272, 283
 Civil War, 123, 125, 129, 168, 197
 Clapham, Prof. J. H., 104, 108, 110, 119, 160, 164, 166, 240 *n.*
 Clark, Colin, 1, 80, 175, 176
 Cobden, R., 164
 Collingwood, Prof. R. G., 22, 26
 Colonies, 107, 108, 111, 123, 133, 134, 135, 137, 142, 143, 144, 151, 258; commercial, 144, 145, 147, 148; settlement and plantation, 144, 145, 148
 Columbus, 122, 136, 141
 Communications, 134, 150, 168, 177, 180, 197, 209, 253, 289
 Communism, 240 *n.*, 235-42
 Competition, 71, 119, 157, 170, 179, 202, 223, 228, 232, 237, 238, 246, 252, 257, 274, 275, 277, 293, 307
Conditions of Economic Progress (Clark), 80 *n.*
 Condliffe, Prof. J. B., 283 *n.*
 Conquistadores, 128
- "Conurbations", 209
 Corinth, 85
 Corn Law, 164, 168
 Cotswold villages, 103
 Cotton goods, Indian, 148, 163
Critias (Plato), 91 *n.*
 Cunard Co., 17
 Czechoslovakia, 256, 273 *n.*
- Davies, Godfrey, 133
 Death-rate, 54, 77, 134, 160, 172, 173
 Deforestation, 90, 96
 Delaware, River, 143
 Democracy, 221, 235, 247, 248, 249, 255, 256, 268, 272, 282, 295
 Denmark, 192, 285
 Dennis, Lawrence, 263
 Detroit Automobile Co., 288
 Diaz, Bartholomew, 122
 Dickenson, G. Lowes, 84
 Diminishing returns, law of, 138, 268
 Division of labour, 63, 165, 212, 219, 225, 247
 Drake, Sir Francis, 127, 141
 Drucker, Peter, 246, 257
 Duranty, Walter, 264
 Durham, county of, 54 *n.*
 Durham, University of, 54
 Dutch, the, 145, 147, 262
- East India Company, 128, 148, 163
 East Indies, 136
Economic Consequences of Progress, (Glenday), 3, 93 *n.*, 251, 252
Economic History Review, 133 *n.*, 309 *n.*
Economic Journal, 65 *n.*, 259 *n.*
Economic Pattern of World Population, *The*, (Condliffe), 283 *n.*
Economist, The, 219
 Edict of Nantes, 36
 Education, 165, 167, 173, 247, 248, 270, 272, 273
 Egypt, 92, 95
 E. I. du Pont de Nemours, 231, 232
 Elbe, River, 108, 111
 Elcho, Lord, 310
 Electrical industries, 178, 198

- Electricity, 11, 180, 197, 200, 201, 210, 289, 304
- Elizabeth, Queen, 125, 126, 128-30, 140-2, 155, 163, 191, 253
- Emigration, 70, 95, 141, 144, 151, 168, 171, 183, 206, 257, 258
- Employment, 134, 140, 150, 157, 158, 160, 170-5, 177, 185, 187, 200-3, 210, 212, 213, 223, 225, 234, 239, 241, 246, 258, 261, 264, 290, 299, 308, 309
- Emporion, 98
- Enclosure, 106, 112, 129, 133, 134, 141, 157, 227, 280
- End of Our Time, The* (Berdyayev), 275
- Engels, F., 1
- Entrepôt trade, 136
- Environment, economic, 2, 4-8, 11-13, 16, 18, 37, 42, 52, 53, 55, 58, 64, 106, 120, 122, 131, 132, 139, 144, 167, 186, 222, 241, 244, 245, 247, 263, 277, 278, 279, 292, 295, 296, 304, 312
- Epic of America, The* (Adams), 261
- Equality of opportunity, 270
- Equilibrium, economic, 6, 7, 26, 55, 57, 87, 187, 279, 295, 297, 299, 312
- Essays in Metaphysics* (Collingwood), 22 n.
- European Central Region, Nazi solution for, 258
- Evolution*, (J. S. Huxley), 42 n.
- Evolution, economic, 42, 67, 136, 154, 162, 178, 185, 192, 204, 207, 214, 218, 224, 227, 235, 251, 253, 259, 270, 275, 278, 296, 298
- Exchange control, 17
- Family, the, 42, 93, 133, 174, 175, 185, 187, 219, 244, 258, 272, 312
- Famine, 105, 289, 297
- Far East, 112, 139, 169, 254
- Farming, types of, 6, 85, 86, 102-5, 107, 108, 110, 138, 139, 145, 215, 225, 229, 258
- Farr, Dr. William, 54
- Faubourgs*, 117
- Fay, Prof. C. R., 166, 182
- Federal Reserve Bank of America, 127
- Federation Act, 1867, 190
- Fertility, 45, 58, 102, 172, 174, 185, 282
- Fiscal Policy and Business Cycles* (Hansen), 198 n.
- Fisher, H. A. L., 131 n., 253 n.
- Flanders, 108, 111, 121
- Florence, 111, 253
- Florence, Prof. P. Sargant, 203 n.
- Food, 5, 17, 99, 110, 111, 134, 157, 159, 169, 170, 175, 185-9, 195, 199, 200, 208, 210, 220, 227, 229, 230, 231, 236, 242, 291, 307
- Ford, Henry, 64, 288
- France, 47, 80, 109, 121, 122, 124, 126 n., 128, 161, 193, 201, 202, 259, 260, 262
- Free Trade, 1, 2, 131, 147, 151, 164, 184, 262
- Freedom, 4, 30, 84, 91, 98, 104, 129 n., 221, 235, 236, 245, 248, 263-5, 276, 278, 284
- French Revolution, 275
- Galileo, 1, 34, 35
- Galton, Sir F., 49
- Geneva, 253
- Genoa, 116
- Georgia, 90
- Germany, 80, 84 n., 107, 108, 112, 147, 169, 183, 193, 201, 202, 227, 228, 240 n., 255, 257-60, 272, 273 n., 274 n.
- Glass, Dr. D. V., 174
- Glenday, R., 3, 93 n., 251, 252
- Goetsch, W., 54
- Gold, 122, 126, 127, 128, 130, 146, 152, 155, 184, 199, 256, 304, 306, 307, 309
- Gold Standard, 166 n., 195, 200, 201, 304
- Gompertz, law of, 50 n.
- Gordon, Douglas, 94
- Grant, H. T. K., 311 n.
- Grapes of Wrath* (Steinbeck), 229
- Great Britain under Protection* (Benham), 2 n.
- Great Depression, the, 304, 308
- Greece, Ancient, 85, 90, 91, 98, 125, 262, 270

- Groups, economic, 21-32
 Growth, economic, 63-82
 Guatemala, 141
 Guilds, 120, 121, 129, 165
 Guillebaud, Prof. C. W., 259

 Hall, Sir Daniel, 90
 Hamilton, Alexander, 183
 Hamilton, Prof. E. J., 126
 Hancock, Prof. W. K., 149 n., 150 n.,
 182, 183, 191, 194 n.
 Hanse Towns, 122
 Hansen, Alvin, 198 n.
 Harrod, H. F., 69 n.
 "Haves" and "Have-nots", 15, 283
 Hawkins, Prof. H. L., 92
 Hawtrey, R. G., 72
Heads of Russian Factories (Schwarz),
 238 n.
 Henderson, Sir Hubert, 195, 196
 Henry the Navigator, 136
 Heraclitus, 26
 Hesiod, 142
Hibbert Journal, 281 n.
 Hierocles, 276
 Hirepurchase, 9, 10, 11, 65, 73, 180, 181
Historian Looks Forward, The (Clap-
 ham), 241 n.
History of England (Fisher), 131 n.
 Hitler, Adolf, 18, 250, 255
 Hjort, Prof. J., 61
 Hoffmann, Walter, 80 n.
 Hogben, L., 58, 231
 Högbom, Prof., 79
 Holidays, 234, 235
 Holland, 122, 124, 259
 Holy Roman Empire, 118
 House of Representatives, 185, 203 n.
 Housing, 157, 158, 179, 209, 248, 298,
 300
 Hoyt, E. E., 302 n.
 Hudson Bay Company, 190
 Hull, Cordell, 261 n.
 Hulme, T. E., 279
 Hundred Years War, 109
 Hungary, 191, 256, 273 n.
 Huskisson, W., 182
 Huxley, J. S., 13, 40, 42 n., 61
 Huxley, T. H., 281

 Ice Age, 152
 Immigration, 143, 151, 193
 Imperial Preference, 194
 Increasing returns, 65
Increasing Returns (Jones), 80 n., 175 n.
 India, 122, 123, 125, 127, 258
India and Democracy (Wint), 274 n.
 Individualistic system, 219, 220, 221,
 224, 231, 232, 235, 237, 240, 246,
 265, 277, 279, 293
 Industrial Revolution, the, 106, 112,
 123, 126, 135-7, 140, 157, 164,
 166, 180, 182, 197, 205, 243, 297,
 312
*Industry and Government in France and
 England*, 1540-1640, (Nef), 126 n.
Infant and Maternal Mortality (Burns),
 54 n., 282 n.
 Inflation, 13, 72, 82, 205, 234, 295, 300
Institute of Statistics Bulletin, 147 n.
 International Labour Office, 202
International Labour Review, 238 n.
 International system, 154, 155, 182,
 189, 197, 198, 238, 261, 262
 Ireland, 59, 151
 Italy, 89, 111, 115, 116, 122, 123, 125,
 193, 258

 Jacks, G. V., 45
 Japan, 80, 202, 241 n.
 Java, 206
 Jews, 115, 116
 Jones, G. T., 80 n., 175
*Journal of the American Statistical
 Society* 1933, 302 n.
Journal of the Royal Statistical Society,
 292 n.
 Junkers, 227

 Keynes, Lord, 48, 127, 128
 Kierkegaard, Sören, 285
 Kolkhoznik, 238
 Kotschnig, W. M., 273 n.
 Kuznets, Prof., 77, 302 n.

Labour Conditions in West Africa,
 (Orde Browne), 98 n.
Laissez-faire, 152, 162, 215
 Lamprecht, C., 109

- Lancashire, 148
 Laski, Harold, 267 *n.*
 Latin America, 141, 145, 201, 202
 Lawrence, T. E., 94, 95, 99
Laws (Plato), 84 *n.*, 105 *n.*
 Leach, Dr., 43
 League of Nations, the, 79
 Lebanon, 99
 Le Chatelier's Principle, 11, 55, 174, 206
 Leisure, 15, 81, 174, 234
 Lend-lease, 252
 Levant Company, the, 128
 Levy, Hyman, 29
 Liège, 79
Limits of Land Settlement (Sauer), 152 *n.*
 Lindsay, A. D., 266
 Linnaeus, 50
 Lippmann, Walter, 260 *n.*, 282
 List, Friedrich, 183
 Little Entente, the, 255
 Liverpool, 119
 Lombard Bankers, the, 257
 London, 11, 35, 36, 58, 84, 124, 125, 143, 145, 160, 208, 209, 254, 260, 310
 London, Greater, Highway Development Survey (1937), 36 *n.*
 London Passenger Transport Board, 209 *n.*
 Lorwin, L. L., 238 *n.*
 Los Angeles, 302 *n.*
 Lotka, A. J., 55
 Luther, Martin, 280

 McAdam, J. L., 161
 McKenna duties, 200
 McKerrow, J. C., 30
 MacLagan, D. Stewart, 54 *n.*, 57
 Malthus, T. B., 5, 50
Man and Society (Mannheim), 273, 274 *n.*
 Manchuria, 152
 Mannheim, Karl, 247, 250, 272 *n.*, 273 *n.*, 274 *n.*, 276
 Manzoni, H. J., 36
 Marcus, B., 238 *n.*
 Marriage rate, 159, 160, 172, 173
 Marshall, Dr. Alfred, 63, 306 *n.*
 Maudslay, H., 161
 Maxwell, J. Clerk, 21
 Maynard, Sir John, 238, 240
 Mecca, 95
 Medawar, P. B., 53 *n.*
Mediaeval People (Power), 112 *n.*
 Mediterranean, the, 90, 97, 107, 114, 116, 122, 130
 "Memorandum of Conclusions, 1938", 194
 Merchant Adventurers Company, the, 113
 Merchants of the Staple, Company of, 112
 Mesopotamia, 95, 96
 Mexico, 127
 Migration, 18, 95, 96, 116, 117, 133, 134, 140, 142, 150, 152, 154, 157, 168, 175, 200, 207 *n.*, 208 *n.*, 210, 214, 218, 225, 229, 250, 252, 253, 257, 259, 263, 301, 302, 306
 Millennium, the, 270
 Mineral Resources and the Atlantic Charter, Conference on, 298 *n.*
 Monasteries, dissolution of, 123, 124, 126, 141
 Money, 5, 15, 58, 72, 82, 109, 119, 126, 128, 154, 166, 183, 199, 205, 219, 256, 294-6, 299
 Mongolia, 152
 Monopoly, 14, 72, 112, 135, 141, 143, 147, 202, 222, 228, 232, 248
 Moore, John, 134 *n.*
 Mullett, C. F., 135 *n.*
 Multiplicative growth, 8, 51, 66, 154, 181 *n.*, 200, 213
 Muscovy Company, the, 142

 Napoleonic Wars, the, 135, 150, 157, 160, 161, 164, 168
 Nasmyth, James, 310, 311
National Income and Outlay (Clark), 175
 National Unemployment Insurance, 174
 Nationalism, 251, 253, 256, 261, 262
Natural History of Population (Pearl), 283 *n.*

- Nature*, 53 n., 91 n., 271
 Navigation Acts, the, 143, 146, 147
 Nazism, 223, 258-60, 280
 Needham, Prof. J., 277
 Nef, J. V., 80 n., 126 n.
 Netherlands, the, 128
 New Deal, the, 206
 New England, 114, 191, 208
 New Zealand, 150, 184, 230, 262
 New Zealand Dairy Industry Commission, 1934, 192 n.
 Newman, W. H., 301, 302
 Niebuhr, Reinhold, 275
 North Sea, the, 121
 Norway, 202
Nouveaux bourgs, 117

Ocean in British History, The (Mullett), 135 n.
Ocean in English History, The (Williamson), 143 n.
 Ogpu, the, 274
On Growth and Form (Thompson), 37 n., 48 n.
One Hundred Years of Land Values in Chicago (Hoyt), 302 n.
 Orde Browne, G. St. J., 98 n.
 Overcrowding, 12, 54, 208, 209, 220
Over-fishing Problem, The (Russell), 61

 Pacifism, 282
 Papacy, the, 129
 Pavlov, Ivan, 58
 Peace, 164, 253, 255, 262, 282
 Pearl, Raymond, 9, 50, 53, 55, 283 n.
 Pearson, F. A., 304 n.
 Penn, William, 143, 285
 Pennsylvania, 143
 Peru, 127
 Philip II, King of Spain, 127
 Pick, Frank, 209 n.
 Pierson, Warren Lee, 261 n.
 Pilgrim Fathers, the, 145
 Pirenne, Henri, 115 n., 116, 119
 Pisa, 116
 Plantation colonies, 144
 Plato, 35, 84 n., 91 n., 105 n., 261, 270
 Poland, 135, 254, 256, 262
 Poor Law, the, 151, 159, 163
 Population growth, 6, 16, 33, 53-55, 60, 66, 67, 73, 74, 80, 86, 87, 93, 95, 100, 101, 104, 107-9, 113, 117, 118, 122, 123, 138, 140, 141, 152, 155, 157-160, 167-171, 181, 182, 185-7, 189, 203, 210, 222, 245, 255, 275, 294, 300-302
 Portugal, 122, 141, 142, 145
 Potosi silver mines, 166 n.
 Power, Prof. Eileen, 97, 101, 107 n., 108, 112 n.
 Previt -Orton, C. W., 118 n., 120
Principles of Economics (Marshall), 63
Production Trends in the United States, 1870 (Burns), 75 n.
 Propaganda, 71, 260, 261
 Protection, 1, 2, 17, 183, 185, 200
 Public works, 14, 67 n., 176, 179, 289, 299
 P rchel, A., 107
 Puritans, the, 129, 131, 145, 267, 281

 Quakers, the, 143
 Quetelet, L. A. J., 47, 48, 291

 Raleigh, Sir Walter, 130
Rape of the Earth, The (Jacks and Whyte), 45
 Rationalisation, 63, 174, 203
Reflections on the End of an Era (Niebuhr), 275
 Reformation, the, 123, 129, 275, 279
 Regimentation, 247, 259, 263, 276, 281
 Renaissance, the, 113, 123, 124, 27, 279
 Repealing Act of 1824, the, 151
Reports on Limits of Land Settlement (Bowman), 283 n.
Republic (Plato), 35, 84 n., 261
 Restoration, the, 147, 160
Retail Trading in Great Britain (Smith), 203 n.
 Revolutionary War, the, 161
Rich Land, Poor Land (Hall), 90
Rise of European Liberalism (Laski), 267 n.

- Rise of Industrialism, The* (Nef), 126 n.
Rise of the British Coal Industry (Nef), 80 n.
 Roberts, R., 161
 Roman Empire, 85, 87, 89, 92, 114, 126 n., 177, 212, 229, 275, 284
 Rome, 89, 91, 92, 254
 Rostov, W. W., 308
 Rostovtzeff, Prof., 89
 Roumania, 255, 273 n.
 Rousseau, J. J., 281.
 Royal African Company, the, 143
 Royal Statistical Society, the, 75 n., 76 n.
 Russell, Dr. E. S., 61
 Russell, Sir John, 139
 Russia, 116, 152, 189, 219, 221, 223, 224, 227, 228, 238-9, 240 n., 247, 255, 258, 260, 262, 264, 270, 278, 282 n.
Russian Peasant, The (Meynard), 238 n.
 Sachs, H., 49
 Sacramento, 166
 St. Louis, 302 n.
 San Francisco, 302 n.
 Saracens, the, 116
 Sauer, Carl D., 152 n.
 Schumpeter, Prof. J. A., 58 n., 164 n., 292 n., 295 n., 297, 304 n.
 Schwarz, S. M., 238 n.
 Scotland, 97, 151
Scripture Word against Inclosure, A (Moore), 134 n.
Secular Movements in Production and Prices (Kuznets), 77 n., 302 n.
 Security, economic, 240, 244, 248, 273
 Settlement colonies, 144, 145
Seven Pillars of Wisdom (Lawrence), 94-5
 Silver standard, the, 304
 Slovakia, 255, 256
 Smeaton, J., 77
 Smith, Adam, 63, 147, 182, 183, 184, 225
 Smith, Henry, 203 n.
 Smuts, Field-Marshal, 254
Social Contract, The (Rousseau), 281
Social Function of Science, The (Bernal), 265 n.
 Social inequality, abolition of, 265-7, 270
Society and Enterprise (Grant), 311 n.
 Solon, 85
 South Africa, 184, 199, 262, 304 n.
 Spain, 92, 97, 122, 123, 126-8, 141, 142, 145, 166 n.
 Sparta, 85
 Spencer, Herbert, 54
 Stalin, Joseph, 239, 240
 Stamp, Dr. L. Dudley, 298 n.
 Standard of living, the, 5, 6, 10, 12, 14, 15, 36, 140, 174, 177, 179, 183, 188, 193, 196, 202, 205, 208, 212, 219, 228, 257, 266, 289, 307 n., 308, 310
 State control, 162, 165, 264
 State Socialism, 241, 264, 267, 268, 281
 Steele, Richard, 280
 Steinbeck, J., 229
 Stewart, Prof. H. L., 281
 Stine, Charles M., 231
 Streit, Clarence, 249
Struggle for Existence, The (Gause), 57 n.
 Stuarts, the, 125, 130, 140, 142
Study of History, The (Toynbee), 18
 Sukatshev, W. N., 5
Survey of British Commonwealth Affairs (Hancock), 149 n.
 Sutter Creek, 166
 Sweden, 123, 192
 Switzerland, 143, 253
 Syria, 95, 96, 99
 Tariffs, 14, 65, 169, 170, 179, 183, 193, 196, 200, 201
 Tawney, R. H., 133
 Telford, T., 161
 Tennessee Valley experiment, 253
 Thompson, Sir W. D'Arcy, 37 n., 48 n., 50
 Totalitarian régime, 264, 274
 Town and Country Planning Association, Conference of, 1941, 36 n.
 Toynbee, Arnold, 18, 86

- Trade Cycle, 7, 9, 40, 67, 69, 71, 136,
143, 159, 169, 175, 182, 183, 195,
201, 217, 231, 233, 237, 239, 252,
261, 287-312
- Transhumance, 96, 97
- Trotter, Wilfred, 270
- Tyrrell, Father, 269
- Unemployment, 15, 18, 81, 112, 145,
151, 162, 173, 176-8, 187, 188,
200, 201, 203, 208, 218, 229, 232-4,
236, 240, 241, 253, 258, 259, 264,
272-4, 290, 297, 298
- Unemployment in the Learned Profes-
sions* (Kotschnig), 273 n.
- Union Now* (Streit), 249
- United States of America, 16, 17, 45 n.,
64, 65, 75, 77-80, 94, 99, 102,
115, 122, 138, 140, 143-7, 149-
52, 164-6, 169, 181 n., 182, 184,
191, 192, 194, 195, 197-202,
203 n., 206, 207 n., 208, 212,
222-4, 226, 228-30, 234, 237,
241, 242, 246, 249, 253, 254, 259-
64, 292, 297, 301, 302
- U.S.A., National Planning Association
of, 283 n.
- U.S. Foreign Policy* (Lippmann), 260 n.
- Usher, A. P., 165
- U.S.S.R., *see* Russia
- Value of Small States, The* (Fisher),
253 n.
- Venice, 115, 116
- Verhulst, Prof., 50, 51, 55
- Versailles, 255
- Vienna, University of, 273 n.
- Villas, Roman, 89
- Volterra, Vito, 53, 55, 59
- Wales, 97, 118, 135, 144, 158, 160, 206,
246
- Walgreen, C. R., 126 n.
- War of Independence, the, 144
- Warren, G. F., 304 n.
- Watt, J., 77
- Wealth of Nations* (Smith), 275
- Weimar, 253
- Wells, H. G., 260
- Wells, O. V., 195
- West Indies, 141, 143, 144, 146, 147,
148, 152, 212, 254
- White, Gilbert, 44
- Whyte, R. O., 45
- Williamson, Prof. James, 135, 143 n.,
144 n., 146, 147
- Wint, Guy, 274 n.
- Woodger, J. H., 2
- Woodward, Prof., 161 n., 164
- Worcestershire, 133
- World Population* (Carr-Saunders),
283 n.
- Yemen, the, 95
- Young, Allyn, 65 n.
- Yugoslavia, 255, 273 n.
- Yule, G. Udny, 7, 171, 173 n.



DELHI POLYTECHNIC
LIBRARY

CLASS NO. 311

BOOK NO. 478

ACCESSION NO. 5116

MGIPC-85-XVI 17 - 11-1-49 2,000